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New — Braasch's Urography

This edition—more correctly a new book—includes the roentgenographic study not only of the renal pelvis but of the entire urinary tract.

It is a complete work—a new work, rewritten, enlarged, vastly improved. It takes you through the history of the subject, points out the contra-indications, helps you select the medium for rendering the urinary tract opaque, illustrates the various positions, tells how to inject the medium and avoid the usual errors. Then Dr. Braasch describes roentgenographic technic in great detail.

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The Massachusetts Medical Society

The next Annual Meeting of the Massachusetts Medical Society will be held in Worcester, Tuesday and Wednesday, June 5 and 6, 192

OFFICERS ELECTED BY THE COUNCIL, JUNE 7, 1927, FOR 1927-1928

PRESIDENT: JOHN M. BIRNIE, 14 Chestnut St., Springfield.
VICE-PRESIDENT: THOMAS J. O'BRIEN, 501 Beacon St., Boston.
SECRETARY: WALTER L. BURRAGE, 182 Walnut St., Brookline.
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STANDING COMMITTEES FOR 1927-1928

ON ARRANGEMENTS
W. T. S. Thorndike, James Hitchcock, E. P. Hayden, H. Q. Gallupe, T. H. Lanman, F. H. Colby.

ON PUBLICATIONS AND SCIENTIFIC PAPERS
E. W. Taylor, R. B. Osgood, F. T. Lord, R. M. Green, A. C. Getchell.

ON MEMBERSHIP AND FINANCE
D. N. Blakely, Algernon Coolidge, Samuel Crowell, Gilman Osgood, Homer Gage.

ON ETHICS AND DISCIPLINE
David Cheever, W. D. Ruston, S. F. McKeen, Kendall Emerson, A. C. Smith.

ON MEDICAL EDUCATION AND MEDICAL DIPLOMAS
J. F. Burnham, A. G. Howard, R. L. DeNormandie, H. P. Steven C. H. Lawrence.

ON STATE AND NATIONAL LEGISLATION
J. M. Birnie, E. H. Stevens, F. E. Jones, T. J. O'Brien, Shiel Warren.

ON PUBLIC HEALTH
Victor Safford, E. F. Cody, R. I. Lee, T. F. Kenney, F. G. Curti

ON PUBLIC INSTRUCTION
A. W. Marsh, W. P. Bowers, W. H. Robey, R. I. Lee, F. W. Stev Conrad Wesselhoeft, F. S. Hopkins, W. J. Brickley.

ON MALPRACTICE DEFENCE
F. G. Balch, E. D. Gardner, F. B. Sweet, R. P. Watkins, A. W. Allen

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John B. Hawes, 2d, Boston, *Chairman;* Walter A. Griffin, Sharon, *Secretary.*

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Kenneth D. Blackfan, Brookline, *Chairman;* Joseph Garland, Bo ton, *Secretary.*

SECTION OF OBSTETRICS AND GYNECOLOGY
Foster S. Kellogg, Boston, *Chairman;* Frederick L. Good, Bost *Secretary.*

SECTION OF RADIOLOGY AND PHYSIOTHERAPY
Frederick W. O'Brien, Boston, *Chairman;* William D. McFe Haverhill, *Secretary.*

OFFICERS OF THE DISTRICT MEDICAL SOCIETIES

ELECTED BY THE DISTRICT MEDICAL SOCIETIES BETWEEN APRIL 15 AND MAY 15, 1927

BARNSTABLE—*President,* F. O. Cass, Provincetown; *Vice-President,* S. M. Beale, Sandwich; *Secretary,* J. L. Chute, Osterville; *Treasurer,* H. B. Hart, Yarmouthport; *Librarian,* E. E. Hawes, Hyannis.

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SUFFOLK—*President,* E. P. Joslin, Boston; *Vice-President,* R. L DeNormandie, Boston; *Secretary,* A. H. Crosbie, Boston; *Treasurer,* John Rock, Boston.

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The New England
Journal of Medicine

VOLUME 198 MAY 24, 1928 NUMBER 14

The Massachusetts Medical Society

PROGRAM OF THE ONE HUNDRED AND FORTY-SEVENTH ANNIVERSARY

THE Exercises of the Anniversary will be held on Tuesday and Wednesday, June 5 and 6, 1928, at the Hotel Bancroft and Chamber of Commerce Building, Worcester.

STANDING COMMITTEES

Of Arrangements—W. T. S. Thorndike, H. Q. Gallupe, James Hitchcock, T. H. Lanman, E. P. Hayden, F. H. Colby.

On Publications and Scientific Papers—E. W. Taylor, R. B. Osgood, F. T. Lord, R. M. Green, A. C. Getchell.

On Membership and Finance—D. N. Blakely, Algernon Coolidge, Samuel Crowell, Gilman Osgood, Homer Gage.

On Ethics and Discipline—David Cheever, W. D. Ruston, S. F. McKeen, Kendall Emerson, A. C. Smith.

On Medical Education and Medical Diplomas—J. F. Burnham, A. G. Howard, R. L. DeNormandie, H. P. Stevens, C. H. Lawrence.

On State and National Legislation—J. M. Birnie, E. H. Stevens, F. E. Jones, T. J. O'Brien, Shields Warren.

On Public Health—Victor Safford, E. F. Cody, R. I. Lee, T. K. Kenney, F. G. Curtis.

On Public Instruction—A. W. Marsh, W. P. Bowers, W. H. Robey, R. I. Lee, F. W. Snow, Conrad Wesselhoeft, F. S. Hopkins, W. J. Brickley.

DELEGATES AND ALTERNATES TO THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

Delegates—F. B. Lund, Boston; E. F. Cody, New Bedford; H. G. Stetson, Greenfield; C. E. Mongan, Somerville; J. F. Burnham, Lawrence; R. I. Lee, Boston.

Alternates—W. H. Robey, Boston; Kendall Emerson, Worcester; L. A. Jones, Swampscott; Gilman Osgood, Rockland; W. C. Leary, Springfield, C. H. Lawrence, Boston.

GENERAL INFORMATION

The profession is cordially invited to attend the exercises of the Anniversary.

A Bureau of Information will be maintained by the Committee of Arrangements during the meeting, in the Lobby of the Chamber of Commerce Building. This building stands next to the Hotel Bancroft on Franklin Street. Both buildings may be entered by separate entrances and one may pass from the mezzanine floor of the hotel to the lobby of the Chamber of Commerce by a connecting bridge. The rooms devoted to the commercial exhibits are between the mezzanine floor of the hotel and the main hall in the Chamber of Commerce building.

A more detailed program, giving pictures and plans of the two buildings, details of the exhibits and a list of exhibitors, will appear in the official organ of the Society, THE NEW ENGLAND JOURNAL OF MEDICINE, in the issue of May 24, 1928. Reprints from this number will be distributed at the Bureau of Information.

Parking in the streets in the vicinity of the hotel is restricted to thirty minutes. Fellows are advised to use the parking space in the rear of the hotel, reached by Portland and Federal streets, or one of the three large garages which are within one or two minutes' walk. A diagram of the streets in the vicinity will appear with the detailed program in the JOURNAL.

All Fellows are requested to register as soon as they arrive, and to get their tickets to the buffet luncheon, to the golf links, if they like, and to the annual dinner, at the Bureau of Information. The buffet luncheon will follow the meeting of the Council, on Tuesday, and will be free of charge. Every Fellow whose dues have been paid is entitled to a ticket to the annual dinner on Wednesday, on the payment of $2.50. Tickets for guests will be issued at $3.00 each.

Fellows are invited to visit the following Worcester hospitals: Belmont Hospital, Belmont Street; Fairlawn Hospital, 189 May Street; Memorial Hospital, 119 Belmont Street; St. Vincent Hospital, 72 Vernon Street; Worcester City Hospital, 71 Jacques Avenue; Worcester Hahnemann Hospital, 281 Lincoln Street; Worcester State Hospital, Belmont Street.

The Worcester Local Committee has arranged with the two local Golf Clubs to permit Fellows of the Society to play on their links at any time during the two days of the meeting. Golf tickets will be issued at the Bureau of Information. It is to be noted that the eighteen hole links of the Worcester Country Club are among the finest in the country.

TUESDAY MORNING, JUNE 5, 9 O'CLOCK

Main Hall, Chamber of Commerce Building

SECTION OF SURGERY

Officers of the Section

Dr. Frederick B. Sweet, Springfield, *Chairman.*
Dr. Walter C. Seelye, Worcester, *Secretary.*

1.—Surgery of the Gall Bladder.

By Dr. John F. Erdmann, New York, N. Y.
Discussion opened by Dr. Philemon E. Truesdale, Fall River.

2.—Surgery of the Bile Ducts.

By Dr. Frank H. Lahey, Boston.
Discussion opened by Dr. Michael F. Fallon, Worcester.

3.—Sequelae and Accidents of Biliary Surgery.

By Dr. Edward Starr Judd, Rochester, Minnesota.
Discussion opened by Dr. Charles A. Porter, Boston.

4.—Pancreatic Complications of Biliary Disease.

By Dr. Daniel F. Jones, Boston.
Discussion opened by Dr. William J. Mixter, Boston.

5.—Biliary disease from the Medical Point of View.

By Dr. Franklin W. White, Boston.
Discussion opened by Dr. Frederick T. Lord, Boston.

TUESDAY MORNING, JUNE 5, 9 O'CLOCK

Large Dining Room, Mezzanine Floor
Hotel Bancroft

SECTION OF PEDIATRICS

Officers of the Section

Dr. Kenneth D. Blackfan, Brookline, *Chairman.*
Dr. Joseph Garland, Boston, *Secretary.*

Serums and Vaccines in the Prevention and Treatment of Diseases of Children—A Critical Review.

By Benjamin White, Ph.D., Director of the Antitoxin and Vaccine Laboratory, Jamaica Plain.

Résumé: Improvements in the preparation and use of serums and vaccines are discussed, with special reference to accepted procedures for vaccination against smallpox and active immunization against diphtheria. The results following the antitoxic treatment of scarlet fever and erysipelas are presented, along with a discussion of the present status of the Dick test, of active immunization, against scarlet fever, of whooping cough vaccine, and the advantages, limitations, and disadvantages of other serums and vaccines.

Discussion by Dr. Francis P. Denny, Health Officer of Brookline; Dr. Richard M. Smith, Boston; and Dr. Oliver H. Stansfield, Worcester.

TUESDAY MORNING, JUNE 5, 11.30 O'CLOCK

Ball Room, Hotel Bancroft

ANNUAL MEETING OF THE SUPERVISING CENSORS

TUESDAY NOON, JUNE 5, 12 O'CLOCK

Ball Room, Hotel Bancroft

ANNUAL MEETING OF THE COUNCIL

Programs of the business to be transacted will be sent to Councilors on May 29.

TUESDAY AFTERNOON, JUNE 5, 1.30 O'CLOCK

Ball Room, Hotel Bancroft

THE COTTING LUNCH AND BUFFET LUNCHEON FOR FELLOWS

TUESDAY AFTERNOON, JUNE 5, 2.30 O'CLOCK

Main Hall, Chamber of Commerce Building

SECTION OF OBSTETRICS AND GYNECOLOGY

Officers of the Section

Dr. Foster S. Kellogg, Boston, *Chairman.*
Dr. Frederick L. Good, Boston, *Secretary.*

1.—The Problem of the Occiput Posterior Position.

By Dr. Arthur H. Bill, Professor of Obstetrics, Western Reserve University School of Medicine, Cleveland, Ohio.

Discussion opened by Dr. Frederick C. Irving, Assistant Professor of Obstetrics, Harvard Medical School.

2.—The Benign Lesions of the Uterine Cervix and Their Treatment.

By Dr. Louis E. Phaneuf, Professor of Gynecology, Tufts College Medical School.

Discussion opened by Dr. Frank A. Pemberton, Assistant Visiting Physician, Free Hospital for Women, Brookline.

3.—Premature Separation of the Normally Implanted Placenta.

By Dr. Joseph W. O'Connor, Visiting Obstetrician, Memorial Hospital, Worcester.

Discussion opened by Dr. Thomas Almy, Obstetrician to the Union Hospital, Fall River.

4.—Report of the Committee on Survey of Incidence of Puerperal Septicemia in Massachusetts, 1927.

By Dr. Charles E. Mongan, Surgeon to the Somerville Hospital, Somerville.

Discussion opened by Dr. Frederick J. Lynch, Instructor of Obstetrics, Tufts College Medical School and Assistant in Gynecology at Harvard Medical School.

TUESDAY AFTERNOON, JUNE 5, 2.30 O'CLOCK

Large Dining Room, Mezzanine Floor
Hotel Bancroft

SECTION OF TUBERCULOSIS

Officers of the Section

Dr. John B. Hawes, 2d, Boston, *Chairman.*
Dr. Walter A. Griffin, Sharon, *Secretary.*

General subject: *Getting the Consumptive Back on the Job.*

1.—The Story of the Altro Work Shops.

By Mr. Edward Hochhauser, President Altro Work Shops, 1021 Jennings Street, New York, N. Y.

2.—The Place of the Industrial Colony.

By Dr. Bayard T. Crane, Superintendent Central New England Sanatorium, Rutland.

3.—The Work of the Placement Committee of the Boston Tuberculosis Association.

By Dr. Harry Linenthal, Chairman of Placement Committee of the Boston Tuberculosis Association.

Discussion opened by: Dr. Robert S. Quinby, Hood Rubber Company, Watertown, Mass.; Dr. Ernest B. Emerson, Superintendent Rutland State Sanatorium, Rutland, Mass.; Dr. Carl C. MacCorison, Superintendent North Reading State Sanatorium, North Wilmington, Mass.; Dr. W. Irving Clark, Norton Company, Worcester, Mass.

TUESDAY EVENING, JUNE 5, 8 O'CLOCK

Ball Room, Hotel Bancroft

THE SHATTUCK LECTURE

By Dr. Evarts A. Graham, Professor of Surgery, Washington University School of Medicine, St. Louis, Missouri.

Subject: *Some Functional Tests and Their Significance.*

Following the lecture there will be a vaudeville entertainment or moving pictures, with light refreshments.

WEDNESDAY MORNING, JUNE 6, 9 O'CLOCK

Large Dining Room, Mezzanine Floor
Hotel Bancroft

SECTION OF MEDICINE

Officers of the Section

Dr. William R. Ohler, Boston, *Chairman.*
Dr. Albert E. Parkhurst, Beverly, *Secretary.*

PNEUMONIA

1.—Clinical Observations of Pneumonia.

By Dr. F. Dennette Adams, Boston.

Discussion by Dr. Roger I. Lee, Boston, and Dr. William H. Robey, Boston.

2.—Care of the Heart in Pneumonia.

By Dr. George M. Albee, Worcester.

Discussion by Dr. Burton E. Hamilton, Boston, and Dr. Lester C. Miller, Worcester.

3.—Treatment of Empyema.

By Dr. Horace Binney, Boston.

Discussion by Dr. Edwin A. Locke, Boston, and Dr. Ernest L. Hunt, Worcester.

4.—Recent Advances in the Scientific Treatment of Pneumonia.

By Dr. Russell L. Cecil, Bellevue Hospital, New York, N. Y.

Discussion by Benjamin White, Ph.D., Boston, and Dr. Frederick T. Lord, Boston.

WEDNESDAY MORNING, JUNE 6, 9 O'CLOCK

Main Hall, Chamber of Commerce Building

SECTION OF RADIOLOGY AND PHYSIOTHERAPY

Officers of the Section

Dr. Frederick W. O'Brien, Boston, *Chairman.*
Dr. William D. McFee, Haverhill, *Secretary.*

1.—Relation between Histologic Structure and Prognosis in Cervical Carcinoma under Radiation Treatment.

By Dr. Max Cutler, Memorial Hospital, New York, N. Y.

Résumé: This study is based upon an analysis of two hundred cases of carcinoma of the cervix treated four and five years ago. Histological material was available in every case. All patients were treated by radiation alone. A comparison of the structure with the clinical course of the disease, the response to radiation, and the final result.

Discussion opened by Dr. George A. Leland, Huntington Hospital, and Dr. Frederick L. Good, Boston City Hospital, Boston.

2.—Physical Therapeutics in Pneumonia.

By Dr. Byron Sprague Price, New York, N. Y.

Discussion opened by Dr. Edwin A. Locke, Boston City Hospital; Dr. Frank Granger, Boston City Hospital; Dr. Edwin T. Wyman, Children's Hospital, Boston.

3.—Practical Points from Pyelography.

By Dr. Douglas J. Roberts, Hartford, Conn.

Discussion opened by Dr. Bernard Spillane, Urologist to the Hartford Hospital, Hartford, Connecticut, and Dr. Merrill C. Sosman, Peter Bent Brigham Hospital, Boston.

4.—Osteochondritis Luetica and the Analogous Zones in Rickets and Infantile Scurvy.

By Dr. Ralph S. Bromer, Children's Hospital, Philadelphia, Pa.

Discussion opened by Dr. Philip H. Sylvester, Children's Hospital, Boston and Dr. Charles F. McKhann, Children's Hospital, Boston.

5.—Electro-thermic Methods in Surgery.

By Dr. Edwin N. Kime, Indianapolis, Indiana,

Résumé: (1) Proper technic in the use of damped and undamped high frequency currents. (2) Electro-desiccation and electro-coagulation, surgical pathology, and clinical applications of each. (3) The advantages and disadvantages of electro-thermic methods as utilized by the general surgeons and specialists in various fields. (4) Illustrations by moving pictures and lantern slides.

Discussion opened by Dr. Halsey B. Loder, Boston City Hospital, Boston.

WEDNESDAY NOON, JUNE 6, 12 O'CLOCK

Main Hall, Chamber of Commerce Building

ANNUAL MEETING OF THE SOCIETY

Business of the Annual Meeting

A draft of the Revised By-Laws has been sent to every Fellow, under the terms of Chapter IX.

WEDNESDAY AFTERNOON, JUNE 6, 12.30 O'CLOCK

THE ANNUAL DISCOURSE

By Dr. Walter B. Cannon, George Higginson Professor of Physiology, Harvard Medical School.

Subject: *The Mechanism of Emotional Disturbance of Bodily Functions.*

WEDNESDAY AFTERNOON, JUNE 6, 1.30 O'CLOCK

Ball Room, Hotel Bancroft

THE ANNUAL DINNER

Fellows desiring to sit together will please send their names to the Local Chairman of Arrangements, Dr. A. W. Marsh, 690 Main Street, Worcester, at the earliest possible date, and the proper reservations will be made.

Be sure to get your dinner tickets early at the Bureau of Information.

MEETINGS OF THE COUNCIL

The Annual Meeting, Tuesday, June 5, 1928, 12 noon, in the Ball Room, Hotel Bancroft, Worcester. Other stated meetings in John Ware Hall, Boston Medical Library, at noon, on the first Wednesdays of October and February.

CENSORS' MEETINGS

The Censors for the several districts will meet for the examination of applicants for fellowship on the first Thursdays of May and November.

The Censors for the Suffolk District will examine applicants residing in that district and also applicants who are non-residents of Massachusetts.

Applicants for fellowship should apply to the Secretary of the District Society of the district in which they reside (have a legal residence) at least one week before the date of a given examination, taking with them their diplomas.

TREASURER'S NOTICE

Assessments should be paid to District Treasurers, or, in the case of non-residents, to the Treasurer.

Assessments were due January 1st. For the convenience of Fellows who have been unable to pay, assessments will be received for the Treasurer at the annual meeting.

1927-1928

OFFICERS OF THE SOCIETY

JOHN M. BIRNIE, President
14 Chestnut Street, Springfield

THOMAS J. O'BRIEN, Vice-President
501 Beacon Street, Boston

WALTER L. BURRAGE, Secretary
182 Walnut Street, Brookline

ARTHUR K. STONE, Treasurer
Auburn Street, Framingham Center

W. T. SHERMAN THORNDIKE
Chairman Committee of Arrangements
24 Marlborough Street, Boston

ARTHUR W. MARSH
Local Chairman of Arrangements
690 Main Street, Worcester

SECRETARY'S NOTICE

All communications as to membership, especially changes of residence and address, should be sent to the Secretary, who keeps a constantly corrected official list of the Fellows and their addresses.

The Annual Directory, distributed to all Fellows in January, should be consulted for information about the Society.

THE JOURNAL

The NEW ENGLAND JOURNAL OF MEDICINE, the official weekly organ of the Society, will be sent only to Fellows who have paid their assessments, and to such Honorary and Retired Fellows as may apply for it. Address communications to the Managing Editor of the JOURNAL, Dr. W. P. Bowers, 126 Massachusetts Avenue, Boston.

HISTORICAL REFERENCES TO WORCESTER

SEVENTY-SEVEN years ago the Massachusetts Medical Society held its annual meeting in Worcester. This was the first annual meeting to be held outside of Boston after its organization in 1781. Then there followed meetings in Pittsfield in 1852, Fitchburg in 1854, Springfield in 1855, New Bedford in 1857, and again in Pittsfield in 1863.

No more meetings were held outside of Boston until the year 1923, since when Pittsfield, Swampscott and Springfield have been honored. There is no record of the meeting place in Worcester.

It may be of interest to recall one of the influences that had to do with the establishment of district societies. Associations for the reporting of interesting cases unconnected with the State Society were being formed in various places; the Boston Medical Society even antedating its foundation by some 46 years.

Probably very few of the present fellows realize that when the Massachusetts Medical Society was formed in 1781 its membership was limited to seventy by law. This limit continued for some time and, as might be expected, membership was made up largely from physicians in and around Boston.

This may have been due in part to the limited membership, but probably also to the fact that travelling and communication in those days were so inconvenient and took so much time that physicians in the western part of the State did not derive much benefit from membership in the Society even if they had an opportunity to join, which may be doubted.

In 1794, thirteen years later, Worcester County was represented in the Society by one person, Israel Atherton of Lancaster.

So in 1794 the physicians of Worcester and Hampshire got together and formed the Worcester Medical Society, and petitioned the legislature for articles of incorporation. This action met with opposition from the Massachusetts Medical Society.

By charter the Massachusetts Medical Society was empowered to examine all candidates desiring to practice medicine and, if found qualified, to recommend them for license. The Society was jealous of this right and naturally desired no rival, with equal powers, in any other part of the State. The petition of the Worcester Society was discussed and disputed for some years, until finally the plan of having district societies was adopted and the State (which then included Maine) was divided into four districts, the Eastern, Middle, Southern and Western. The Western was made up of Worcester, Hampshire and Berkshire.

It was in 1803 that these districts were decided upon, and at the same time the limit on membership was raised and soon abolished. The Western district, if it ever was in actual existence, must have been very short lived, for the very next year the "Worcester District Society" was incorporated (1804), and 1807 the Berkshire District was also incorporated.

Apparently this infant of the State Society was well developed and nourished at birth, and has continued lusty and hearty ever since as it has kept in existence without missing its meetings for 124 years.

As stated in the program prepared by the Secretary the meetings this year are to be held in the Hotel Bancroft and in the adjoining Chamber of Commerce Building. These two buildings face on Franklin Street, and overlook the old "Common" which is in the very centre of Worcester's business life.

In this Common is one of the oldest burying grounds in the City, but nothing of it shows as many years ago all the stones were placed flat a foot or two below the surface and the whole area grassed over.

More interesting, and certainly more visible, is the monument to Colonel Timothy Bigelow, whose life story is so interesting and with such a touch of sadness in it that a short sketch of it may not be amiss.

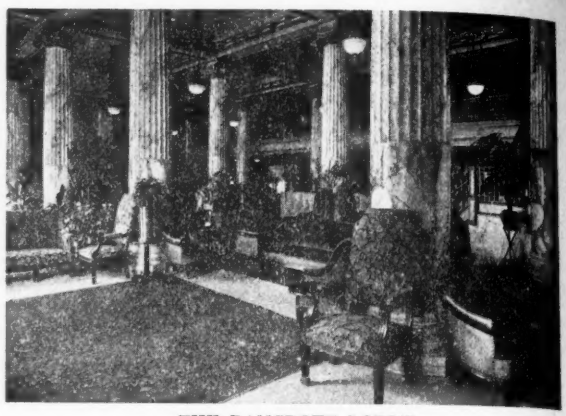
He was a blacksmith by trade, active in the feverish days before the Revolution. It is said that he was so ardent a patriot that he would refuse to shoe any horse belonging to a man with Tory leanings.

He was Captain of the local militia, and when the call came for men after the battles of Lexington and Concord led his company of 76 to take part in the siege of Boston. While on this service he was made a Major. He joined Arnold's expedition against Quebec, which tried to reach that town by a route through the forests of Maine and Canada. En route, he climbed a certain mountain for reconnoitering, and that mountain now bears the name of this old Worcester patriot. Everyone who has hunted or fished in that region (not far from Rangeley) well knows where Bigelow Mountain is.

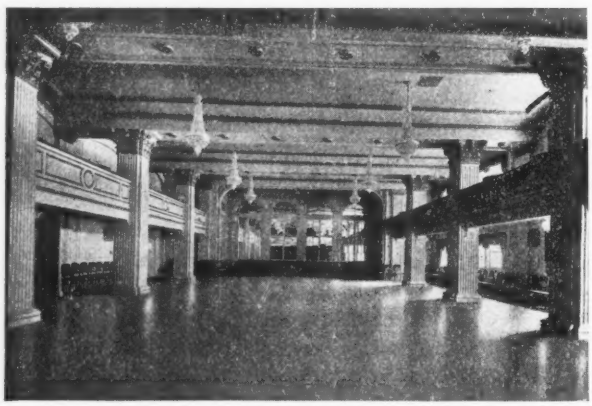
He was taken prisoner on this trip. Just how he was freed from bondage does not matter here, but he next appears as a Colonel in command of a regiment at Saratoga. Later again he was with Washington at Valley Forge and at West Point. He evidently stayed in service during the entire war. Three events of his later life may be mentioned: (1) It is said that he founded and named the present capitol of Vermont, Montpelier. (2) He was at one time in command at the State Arsenal at Springfield. (3) He never was a thrifty man, and ended his days in a debtor's prison, dying one month after being placed there.

The City Hall stands on the "Common", facing Main Street and directly in front of the entrance, set in the stone, is a star, and beneath this star a tablet with the following inscription: "This star marks the spot where the Declaration

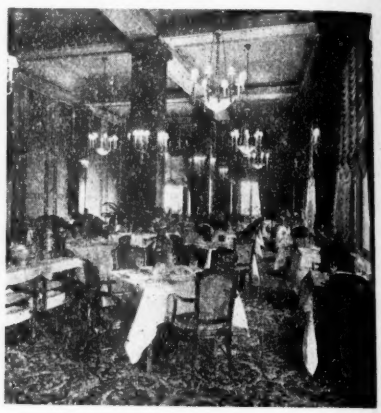
THE BANCROFT, WORCESTER, MASS.
Under the direction of the United Hotels Company of America.



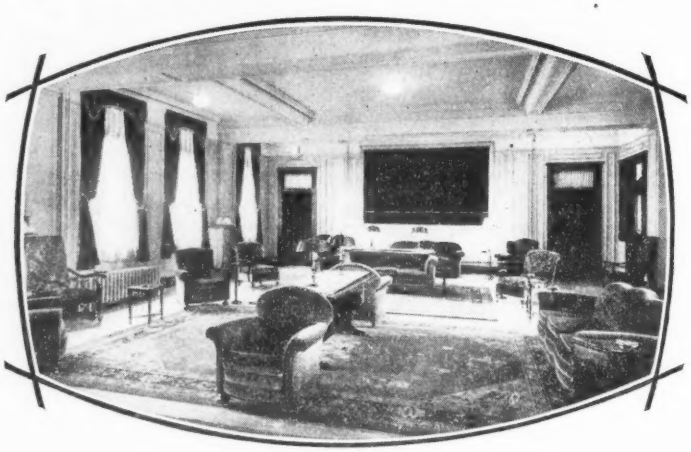
THE BANCROFT LOBBY.
Stairway leads to Chamber of Commerce entrance.



BANQUET HALL AND BALLROOM, THE BANCROFT.



THE MAIN DINING ROOM OF THE BANCROFT.



CHAMBER OF COMMERCE LOBBY.

WORCESTER COUNTRY CLUB.

of Independence was first read in New England'' etc. This is where the meeting house (later the Old South Church) stood, and from the top of the porch Isaiah Thomas read the Declaration.

The site of the hotel itself has a historical interest in that in 1755 John Adams, second President of the United States, came to Worcester as a pedagogue and boarded in the family of a Dr.. Nahum Willard, whose house stood on the spot where the hotel now stands. Adams, having access to the doctor's library, became so interested in medical matters that it is said that he nearly threw up his career as a teacher to study medicine. Dr. Willard was a rank Tory (later driven from Worcester), and if they ever discussed current events, feeling must have run high.

Later on this site was occupied by the first Methodist Church in Worcester, and, when that body built a larger church elsewhere, the French-Catholics bought and occupied the edifice until it was destroyed by fire some twenty-five years ago.

The present Hotel Bancroft now occupies this same site, with its front on Franklin Street, extending on Portland Street to the next street, Federal. The Chamber of Commerce Building stands next to the Hotel, and the two corporations have arranged a passage from one to the other without being obliged to go out of doors.

The name ''Bancroft'' has a local significance which may be of interest to the fellows who visit Worcester next June. We have the Bancroft Hill, the Bancroft Tower. A number of local concerns have taken the name of Bancroft.

About two miles from the Hotel, in the direction of Holden, stands a stone bearing a tablet with the following inscription: ''Twenty feet to the east of this stone stood the house in which George Bancroft, Historian of America, son of Aaron and Lucretia (Chandler) Bancroft was born October 3rd, 1800.''

It may not be out of place here to give a few facts concerning George Bancroft, his life and what he did. He lived as a boy in Worcester, graduated from Harvard at the age of seventeen. He was the son of a clergyman and inherited from his father those traits for study and capacity for work which he later displayed.

After graduating from Harvard he went to Europe for further study, but at that early date had decided to make history his special work. He studied in Berlin, Jena, Gottingen, and Heidelberg, returning to America in 1822.

In 1834, twelve years later, the first volume of his ''History of the United States'' appeared, but the last and tenth not until 1874, forty years later. It is hard to conceive of the amount of reading, study and work he must have put into developing this History, which covered the greater part of his working days. At his death, and by his wish, his library was offered to the Congress of the United States. Rich in historical manuscripts, it would have been a great addition to the Congressional Library; but after delay and dilly-dallying, the trustees sold it to the Lenox Library in New York for over $100,000.

Aside from his work as an historian, he was a member of President Polk's cabinet, and later represented the United States at the Courts of St. James and Berlin. During his ministry at these two courts, two important diplomatic disputes were settled. (1) The dispute over the Northwestern boundary line between Canada and the United States, which called forth the famous campaign slogan, "'Fifty-four forty or fight''. (2) The dispute between England and this country over the former's claim that no emigrant from Great Britain and Ireland could throw off his allegiance to the mother country and become a citizen of the United States, a point that England up to this time had refused to concede.

George Bancroft died at Washington at the ripe old age of ninety-one.

While in Worcester, if one cares to, one can get a splendid view of the city and surrounding country from the top of the Bancroft Tower, which stands on the hill of the same name, at the foot of which is the stone that marks the site of the historian's birthplace.

It is fitting, then, that the name of Bancroft should be given to Worcester's largest and most modern hotel, and the committee of arrangements, after having looked over the ground, are satisfied that not only is there ample space to carry on the section meetings and other activities of the program, but that those who come prepared to stay over-night will find every comfort and convenience for their personal requirements.

The Bancroft is one of the chain of foremost hostelries in the United States and Canada under the direction of the United Hotels Company of America, a chain which includes such nationally known hotels as the Roosevelt in New York, the Benjamin Franklin in Philadelphia, the Ten Eyck in Albany, the Onondaga in Syracuse, and the Mount Royal in Montreal.

The Bancroft has five hundred rooms, each equipped in the most modern, hygienic and comfortable manner.

Mr. Roy L. Brown, the manager of the Hotel, and his assistant, Mr. George Leonard, have been most attentive to the committee and have shown themselves desirous of helping to make this meeting a success.

Back of the lobby, which one enters either from Franklin or Portland Streets, is the large ball room where it is proposed to hold the Council meeting Tuesday noon, the luncheon immediately to follow, to which every member of the Society is invited; the Shattuck lecture and entertainment Tuesday evening, and the annual dinner Wednesday noon. From the gallery of the Ball Room one steps to the Mezzanine Floor, on which are a series of smaller banquet rooms. In numbers 1 and 2, with a seating capacity of

200, the Sections on Medicine, Tuberculosis and Pediatrics will meet. The other rooms will be given over to the exhibitors.

From the Mezzanine Floor one also can pass directly into the Chamber of Commerce Building, where the registration desk will be and the bureau of information maintained by the committee of arrangements. Then by passing down one flight, either by lift or stair one immediately enters the other large hall where the Sections on Surgery, Gynaecology, Obstetrics, and Radiology and Physiotherapy will meet. The annual business meeting will be held and the annual oration given in this hall.

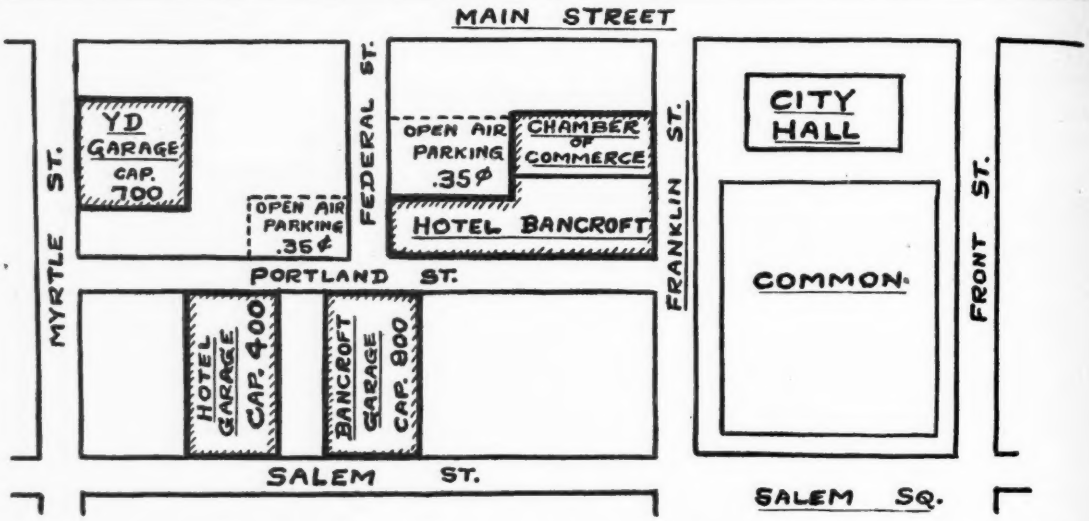
Located near the center of the State, easily reached by train or over good roads from any direction by auto, and with what seems to us an unusually attractive program, it would seem as though the stage was set for a good time in Worcester this year.

There is no street in the vicinity of the Hotel where parking of cars is allowed for more than thirty minutes, but in the rear of the Hotel is a large parking space, and as the accompanying diagram will show there are three large modern garages within a minute or two walk of the Hotel.

For those who want to play golf, the committee would suggest as the best time the afternoon of Wednesday, after the annual dinner.

The evenings are long and there is plenty of time for an eighteen hole game. Those who wish to play should notify Dr. F. W. George, 11 Ashland Street, or Dr. E. H. Trowbridge, 36 Pleasant Street.

If there are players who would like to arrange two-somes or four-somes, or if a single player would like a companion, a notice to either of these men will suffice.



CLINIC AT THE BOSTON CITY HOSPITAL*

PLANS AND PROGRESS OF THE BOSTON CITY HOSPITAL†

BY JOHN J. DOWLING, M.D.

TEN years ago the total appropriation for maintenance for this Hospital was approximately $867,000. The appropriation for maintenance for the past year was $2,100,000.

Ten years ago there were admitted 20,753 patients at an average per capita cost per day of $2.41. This year there will be admitted over 26,000 patients, at a per capita cost of approximately $4.80 a day.

Ten years ago the Trustees of the Hospital were fully alive to the fact that the Hospital must be enlarged, and had developed a program, a part of which has already been accomplished. It was seen that the demand for beds would increase, but no one could foresee the very rapid increase in the need for beds that followed just after the war and has continued to this time. This has resulted in a great deal of overcrowding of our wards. Happily, this condition will be overcome before next winter, with the completion of the new surgical and medical pavilions.

Ten years ago the Trustees definitely decided to expend the Thorndike Fund for the construction of a building to be devoted to research and to build it on the site of old Ward P. Plans were drawn at that time, but, because of the war, construction was delayed. It has now been functioning for five years, and, under the direction of the late Dr. Francis W. Peabody, its fame has spread throughout the medical world. The cost of constructing and equipping this building was approximately $500,000.

Ten years ago the Out-Patient Department was very inadequately housed in the old Out-Patient Building and in the Entrance Lodge. It was exceedingly crowded at all times, almost indecently so, male and female patients being crowded together, and so the Trustees decided that the most important need at that time was the construction of a new Out-Patient Department. Ten years ago 130,000 visits were made to our Out-Patient Department. In our new Out-Patient Department we are averaging about 900 visits a day, and the statistics, I am sure, will show that approximately 250,000 visits will have been made during this year to the Out-Patient Department. The building is seven stories high, and was so constructed as to give the maximum of privacy to patients, consistent with good care. The unit system of records was installed. This new Out-Patient Department will easily care for more than twice the number of patients resorting there for treatment at the present time. The cost of constructing and equipping this building was $665,594.15.

*For the Suffolk District Medical Society, December 28, 1927.
†For record and address of author see "This Week's Issue," page 775.

The demand for beds having become very acute, four years ago the Trustees went to Mayor Curley and the City Council and applied for $3,000,000 to be expended on the plan which they presented and which is now being developed. The money was granted, and, as a result, the following buildings have either been finished or are under construction, or plans have been drawn for the same.

The old maternity department, started in a very small way about ten years ago, became so overcrowded that we were unable to care for the Boston cases applying. Because of the crowding of the wards and the continual danger of cross infection, it was decided that beds for expectant mothers were our greatest need, and so the first building constructed under this three million dollar grant was the Maternity Building, which stands at the corner of Albany and Concord Streets. This contains six stories and a basement. The top floor is devoted to admission baths, case rooms, delivery rooms, operating rooms, and several isolation rooms for the care of patients suffering from uremic convulsions. Three floors each contain twenty-six maternity beds, nurseries, and isolation rooms, both for mothers and babies. The beds for mothers and babies are in cubicles, so that the danger from cross infection is believed to have been reduced to a minimum. Two floors contain twenty-six beds each for gynecological cases, isolation rooms, dressing rooms, etc. On every other floor a small ward laboratory has been installed.

With the increasing number of beds, it was obvious that more nurses would be needed, so the Trustees determined that the next building necessary was an addition to the Nurses' Home. A wing containing 125 beds has been constructed, and is now occupied by the nurses. The old Vose House has been remodelled and a new elevator installed. There are modern class rooms, laboratories, a model ward, and all things necessary for the teaching of modern nursing. As a luxury, we constructed a swimming pool 45 feet long, which has added greatly to the happiness of the nurses.

On the site of Wards W and X a new surgical pavilion of eight stories and basement is now being constructed. The basement will house the indoor department of Electrotherapeutics and a large plaster room. The first floor will take the place of the present accident wards, and will contain three small wards—male, female and children's. On the same floor there will be two 3-bed shock rooms with a small operating room between for transfusions. The seven stories above will each contain a twenty-eight-bed ward and rooms which may be used

for isolation or private rooms. This building will be finished and ready for occupancy in August or September of next year.

A contract has been awarded for the enlargement of the power house, to carry the increased load.

Old Wards Q, R and S and the service portion of F, G and H are now being demolished, and a contract has been awarded for the construction of a House Officers' Building to contain 125 rooms. This will be on a par with any such building in the country, and will contain, besides bed-rooms, a dining room, reading rooms, two squash courts, and a swimming pool 65 feet long.

In the space provided by the demolition of Wards Q, R and S, which will be partly occupied by the House Officers' Building, a new Medical Pavilion of nine stories will be started in the early spring.

Contracts will soon be awarded to enlarge the laundry, dining rooms and kitchens for the various grades of employees.

The buildings I have just mentioned were provided for by the three million dollars already allowed, but the Trustees earnestly desire, not only to provide for the present needs of the Hospital, but to anticipate its ultimate growth on the present site, and have drawn tentative plans to that end and have already requested His Honor, Mayor Nichols, to provide three million dollars more for the following purposes:—

On the plot now occupied by the present operating floor, Wards B, C and D, accident floor and casualty wards, to construct a new U-shaped eight-story building, to contain accident wards and offices for the admission and discharge of patients and on the top floor operating rooms for general surgery, eye, ear, nose and throat, and neuro-surgery. This building would be large enough to house all surgical patients applying to this Hospital for treatment now, and for some years in the future.

On Harrison Avenue to construct a new Administration Building—the first floor for the admission of friends of patients and all persons having business with the Hospital, and, for the various offices in connection with the administrative work of the Hospital. The second floor to contain record room, library, Trustees' Room, and such offices as are not provided for on the first floor. From this building tunnels would connect with both the medical and surgical sides.

On Massachusetts Avenue to construct a private pavilion of about 125 beds.

On the site of the present Pathological Building, to construct a new Pathological Laboratory four stories high.

On the corner of Harrison Avenue and Northampton Street, on the grounds of the South Department, to construct a new measles pavilion, and to remodel the older South Department buildings.

This year the Boston Sanatorium of 400 beds was transferred to the Hospital Department, and we are now preparing plans for a new building that will contain 120 beds for incipient tuberculosis.

THE EFFECTS OF TONSILLECTOMY ON THE ATTACK OF ACUTE RHEUMATIC FEVER*

BY WILLIAM H. ROBEY, M.D.†

THE interest in cardiology has steadily increased in the last twenty years, and great progress has been made, especially in the last ten. The electrocardiograph has contributed to the elucidation of many of the rarer types of arrhythmias and has been able to show us such conditions as bundle branch block, which formerly could not be recognized clinically. It has also shown us many interesting and rare findings—some of which have been of prognostic value, while others have been of mere academic interest. The practitioner of medicine should train himself to recognize the various cardiac findings, which he can do in the great majority of cases, using instruments merely as a check. All of this work is in the line of treatment of heart lesions. What we desire most is the prevention of heart disease.

At a meeting of cardiologists recently in New York the fear was expressed that we are in a hopeless state concerning prevention.

In an effort to prevent heart disease in cases of acute rheumatic fever we have performed tonsillectomy in about seventy-five cases during the time of the joint activity and fever. Most of these cases have had sodium salicylate before their entrance to the hospital, and none have been operated upon until we have satisfied ourselves that the tonsils harbored the focus of infection and have proved to our own satisfaction that the ordinary medical treatment has failed. We have had many successes and a few failures. Here is the case of a woman of forty-four with painful joints and fever for three weeks. For a day or two the fever would subside and the joints become less painful, and we would conclude that our medical treatment was successful. This condition went on for four or five weeks and it was not until tonsillectomy was performed that the process quieted down and remained so.

In the seventy-five cases which we have operated upon there was but one death—a man of fifty-eight who had tender wrists and whom med-

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†For record and address of author see "This Week's Issue," page 775.

ical treatment failed to affect over a period of two months. The operation was followed by a profuse hemorrhage and he died in five days of bronchopneumonia. There has been no other case of bronchopneumonia and very few of post-operative hemorrhage.

Here is a case of failure. A girl of twenty had a partial tonsillectomy without relief. We found tonsillar remains which were removed without benefit.

Occasionally the joints have been made worse for a few days and have then subsided—the process apparently being ended. I make it a practice to always tell patients who are having tonsillectomy performed for rheumatism that there may be an active process induced, but I have never found that it was of importance or of more than a few days' duration. If you do not say that, the patient is disappointed, should such an event occur.

We have stopped chorea in two very bad cases which had resisted arsenic and salicylates for five and six weeks. In the first case the process had entirely ceased in five days and in the second in eleven days.

We have found that tonsillectomy in these cases is as safe as any other surgical procedure, and we can see no difference, as far as the operation is concerned, between cases operated on during the height of rheumatic fever and interval operations. It has the following advantages: (1) It reduces the risk to the heart, (2) It ends the acute suffering, (3) It is of great economic value to the patient because he is able to get back to his work sooner, and (4) It is of economic value to the hospital because these patients are able to leave much sooner and, therefore, reduce the expense per patient and also give us the use of the bed for the next patient.

SUPPURATIVE DISEASES OF THE LUNGS*

BY HORACE BINNEY, M.D., F.A.C.S.†

IN my remarks on suppurative diseases of the lungs I shall confine myself to brief reference to a few of the newer phases of the subject, and to mentioning a few personal experiences, chiefly with cases at this Hospital.

Etiology: As to causation of abscess following operation upon the upper air passages, the theory of aspiration has, until recently, been regarded as generally applicable, rather than the theory of embolism. The fact that, in several series of abscesses after tonsil and adenoid operations, the proportion of cases following general anaesthesia is much larger than that following local anaethesia is considered as proof of this point. It must be admitted, however, that the great majority of these operations are done in young children where local anaesthesia is impossible. Therefore, a comparable number of cases done under local anaesthesia must be studied, before the statistics can be of much value. Recent experimental work, by Cutler and Schlueter, seems to favor the embolism theory. They were able to produce lung abscess in all cases, using dogs and causing bacterial emboli by a special technique. They also point to the fact that experimental attempts to produce aspiration abscess have almost invariably failed. The question must be regarded as still unsettled.

Pathology: The best recent description of the pathology in bronchiectatic disease is by Aschner, who studied specimens from a number of lobectomy operations performed by Lilienthal. He classifies the conditions found as follows: (1) bronchiectasis, (2) bronchiectatic abscess, (3) suppurative pneumonitis, and (4) extrabronchial abscess. Oftentimes these groups overlap, there being a combination of lesions. Gangrene may, apparently, develop in any one of them, if anaerobic bacteria are present and the patient's resistance is poor.

Spirochaetal Infection: The occurrence of this form of infection was emphasized by Kline and Berger in 1925, and 15 cases were reported of which 5 were moribund, 5 severe and 5 mild. The latter 10 cases responded to arsphenamin, and recovered in a striking manner. My experience is limited to 2 cases—the first, a man of 55, who following a mild influenzal attack, developed signs of bronchiectatic abscess. The X-ray gave a typical picture of a localized process in the upper right lobe. There being no large cavity and symptoms not urgent, operation seemed contraindicated at the time of my examination. Later spirochaetes were found in the sputum and treatment with arsphenamin was followed by rapid recovery. Of a few cases in the hospital examined for spirochaetes, only one was positive, that being a mild case showing very few organisms, and recovery took place without specific treatment. I believe the staining of the sputum for these organisms should be a routine procedure except, perhaps, in obvious cases of large abscess cavities requiring drainage. Kline showed that the origin of the pulmonary infection was often pyorrhea or carious teeth. Material from these sources contained many Vincent's spirochaetes and fusiform bacilli, which, injected into traumatized tissue in guinea pigs, caused death from gangrene.

Lipiodol: This preparation was introduced into surgery by Sicard and Forestier in 1921, and its value in demonstrating pathology in the lungs was shown by Sergent and Cottenot in 1925. Since then, many surgeons and laryngologists have employed it, chiefly to map out

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and localize bronchiectatic cavities and lung abscesses. A number of articles have been published in which great therapeutic value has been ascribed to it, especially in suppurative bronchiectasis, with or without bronchoscopic treatment (suction). Pritchard, of Battle Creek, treated 3 cases with repeated injections, varying from 6 to 16 in number, and stated his patients were much improved. Hedblom and others have employed it as a routine in diagnosis, but have not found it of any permanent benefit, as regards treatment. That has been our experience here at this hospital. The oil seems to diminish cough and expectoration for a few days following the injection, but no permanent benefit has resulted. There have been no bad effects from its use. The earlier attempts were with the bronchoscope, and, consequently, were attended with difficulty. More recently we have used the transglottic method, injecting the oil through a curved canula. This has worked very well and is much easier for the patient to undergo.

Operative Methods: In abscess, we have followed the ordinary methods of one or two stage operation, depending on the presence or absence of pleural adhesions walling off the general cavity. Local anaesthesia is used. Until recently I have always employed tube drainage. A fatal hemorrhage, however, in a recent case, occurring about two weeks after operation, where a particularly soft and pliable rubber tube had been used, makes me adopt an attitude of extreme caution. Hereafter, I shall use only gauze or rubber dam drains.

In bronchiectasis, which does not yield to medical measures, including rest in bed and posture drainage, surgery is certainly indicated. The only question lies in the choice of a method.

Simple tube drainage of the bronchiectatic area, which implies drainage of some of the cavities in, or connecting with, the bronchioles and more or less aeration of them, is of distinct value in the certain cases. I have employed this in a few cases with some benefit in all. It is often only palliative, but in bilateral disease may be all that we can safely employ.

The more radical methods are lobectomy, which even in Lilienthal's hands has a mortality of 40 per cent. Graham's cautery lobectomy, in which he had a mortality of 8 per cent. in 45 cases, and Whittemore's lobectomy by extrathoracic suture and subsequent sloughing of the lobe. The latter has performed this operation 6 times with one death.

I have used the last method in one case, probably an unfavorable one, as I found the adhesions too dense to deliver more than a third of the lower lobe. The patient went through the operation well, but succumbed the following day. An operation, which is far safer and, therefore, applicable in the majority of cases, is the graded extra-pleural thoracoplasty, as described by Hedblom. This is done in several stages and gives, usually, a great measure of relief through collapse of the diseased area and healing by cicatrization of a varying number of the cavities. It cannot be expected to accomplish a complete cure.

In one of my cases where the amount of expectoration was from 12 ounces to a pint in 24 hours, this operation, combined with phrenicotomy on the affected side, reduced the sputum to 4 ounces and permitted the patient to go back to work. In young and vigorous patients, no doubt, the more radical operations of Graham or Whittemore are justified. In the average case, however, I feel that extra pleural thoracoplasty is safer and promises a large measure of relief from symptoms.

THE THEBESIAN VESSELS OF THE HEART AND THEIR RELATION TO ANGINA PECTORIS AND CORONARY THROMBOSIS*

BY JOSEPH T. WEARN, M.D.†

I want to tell you very briefly of some experiments which have been carried on in the Thorndike Laboratory during the past two or three years. These experiments, we feel, throw some light upon various phases of the diseases of the coronary arteries. After several attempts, it was found that, if one obtains a human heart within four or five hours post mortem and perfuses the coronary arteries with oxygenated Locke-Rosenheim solution, it is possible to start the heart beating, provided rigor mortis has not set in. If, while the heart is beating, Berlin Blue is injected into the arteries, the dye fills the arteries and injects very completely the entire capillary bed. Such an injection shows about one capillary for every heart muscle fiber. This is a very rich blood supply indeed. By this method we have also been able to confirm the findings of Spalteholz and numerous other workers, namely, that the coronary arteries are not end arteries. The larger arteries frequently anastomose. This is rather interesting, if one looks back into his clinical experience and recalls the fact that death may result frequently from a thrombosis of a smaller branch of an artery.

While conducting these experiments, we were quite surprised to note that a great deal of the dye and perfusate ran out, not through the veins of the heart, but directly into the chambers of the heart. Investigation of this point revealed the fact that this escape was through the Thebesian veins. We had to go as far back as 1706

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in the literature to find that Raymond Vieussens had done this. Thebesius had also made the same observations, the main difference being that he used safranin dissolved in whiskey. We have not been able to repeat Thebesius' experiments because it is not possible at present to obtain his reagents in a pure state.

This finding points to the fact that there is a direct connection between the coronary arteries and the Thebesian veins. Histological sections have shown us, moreover, that this connection is not by way of the capillaries. It is important, therefore, to note that there is a "shunt system" between the arteries and the chambers of the heart.

We next cut out one of these small Thebesian vessels and by means of serial sections traced it from its opening in the chamber and found that large veins were emptying into it and that at times it terminated by a direct connection with the capillaries. This point also is very significant, as it shows that there is a direct connection between the chambers of the ventricles and the capillaries of the heart muscle. The clinical significance of this point you will see when I tell you of the following two cases. For these two cases I am deeply indebted to Dr. Timothy Leary. The first one was a negro woman who dropped dead. Such history as was obtainable pointed to the fact that she had earned her living almost up to the time of death as a seamstress. Necropsy revealed the fact that she had syphilitic aortitis and that both coronary artery openings were occluded by the syphilitic process. Another similar case was that of a seaman who gave a history of indigestion, but who also worked almost up to the time of his death. He also dropped dead, and the pathological findings in his heart were identical with those in the case I have just cited. Here, then, are two people able to work without coronary arteries. Where did the blood supply to their heart muscle come from? It has been shown that there is a direct connection between the Thebesian vessels and the capillaries of the heart muscle. It is almost certain that this is the origin of the blood supply in these two hearts.

Many of you have seen in the autopsy room very marked sclerosis of the coronary arteries, so marked, indeed, that the lumenina were practically closed. Many of these people had had angina pectoris, and I should like to point out to you that this sclerotic process, as well as the syphilitic process, noted in the two cases above, was very gradual in its onset, so that the closure of the coronary arteries was very slow. In other words, if the closure of the coronary arteries is brought about very gradually, the Thebesian vessels can take up the function of these arteries and supply the heart muscle with blood. It is most likely that it is the sudden closure of the small terminal branch in coronary thrombosis that causes death, for we have found that, if the patients survive the first immediate attack, they will recover, very frequently, if placed at absolute rest in bed. This long rest probably enables the heart to recover. A similar rest is often advantageous in the treatment of angina pectoris. It is my feeling that these long periods of rest enable the Thebesian vessels to take up more of the duties of the coronary arteries.

CASE OF MALIGNANT DISEASE IN THE VULVA*

BY NATHANIEL R. MASON, M.D., F.A.C.S.†

The patient, C. R., was first seen March 17, 1927. She was 65 years of age and single. She gave a history of itching about the vulva for two years. The appearance of pain in this region caused her to seek relief. In January, 1926, an operation was done on the external genitals, and a warty growth was said to have been removed. A pathological report was not obtainable. Great relief of symptoms followed the operation. When first seen in March, severe pain and itching had been present for several months and was much increased for several weeks. Bleeding had been present only since the day before. Local examination showed an edematous left labium minus, in the upper part of which were two indurated lesions of the size of silver quarters, the upper one showing a crater in the interior. A bloody purulent discharge from the crater had a foul odor, suggestive of malignancy. A vaginal examination was negative, in no way suggesting a malignant involvement. The patient was sent here to the hospital at once.

Under treatment the lesions were cleaned up. The blood pressure dropped from 220 to 150. Dr. Mallory's report from a snipping was epidermoid carcinoma. On April 1, a partial vulvectomy was performed. Both the left labium majus and minus were removed, excising a broad base about the lesions. The right labium minus was also excised, as it was situated opposite the lesions on the left side. The wound was closed with interrupted silk worm gut, leaving a raquet shaped scar. Convalescence was satisfactory with slight infection of the wound. Dr. O'Brien has given her 5 ten minute treatments with x-ray therapy on the 9th, 13th, 18th and 31st of August and on September 7th.

When last examined on November 30th, there was no evidence of recurrence, either local or glandular. The tissues were soft, pliable and surprisingly free from scar tissue.

In connection with this case, I want to report briefly the history of a patient previously shown by me here on May 6, 1924, when a Cancer Clinic was held.

This patient, E. C., is 59 years old. She was first seen July 20, 1922, with local symptoms about the external genitals of four to five months' duration. A snipping from a suspicious growth at the posterior angle of the introitus, September 18, 1922, showed epidermoid carcinoma, when examined by Dr. Mallory. Five days later on September 23, 1922, a very extensive vulvectomy with dissection of glands in both groins was performed. Dr. Walker radiated the patient twice with 100 miligrammes of radium needles, on October 27, 1922, and January 14, 1923.

*Presented at the Boston City Hospital Clinic for the Suffolk District Medical Society, December 28, 1927.

†For record and address of author see "This Week's Issue," page 775.

The patient was last seen on December 15, 1927, and was found to be in excellent general condition with no sign of local recurrence. She presents, apparently, a cure more than 5 years after radical operation.

Malignant disease of the external genitals is rather rare. Chronic irritation of the vulva, as pointed out by Taussig, particularly keratosis vulvae, seems to have a definite relation to the origin of cancer. Both carcinoma and sarcoma may develop in this region. The same distinguishing signs characterize the disease as elsewhere. Progressive induration, ulceration and involvement of lymph glands in the vicinity occur.

The commonest variety is epithelioma. It starts usually on the lower portion of the labium majus as a small hard nodule, which develops slowly and, at first, causes no symptoms. Occasionally troublesome itching is present from the start. After a varying period, the nodule breaks down, producing an ulcer surrounded by an indurated area. A watery discharge, at times mixed with blood, develops. Progress is rapid, after the malignant induration breaks down and ulceration occurs. Occasionally burning and superficial pain are present early, and, later, severe pain from the involvement of the deeper structures may develop.

Crossen points out that the inguinal glands become enlarged early at first simply from the lymphatic enlargement that always takes place when there is inflammation or persistent irritation of the genital region. As the process goes on, the glands become invaded with cancer cells and markedly enlarged.

The urinary meatus is an occasional site for cancer, and, whenever there is indurated tissue with bleeding in this locality, it must be considered. Carcinoma of the clitoris, likely to be melanotic, and cancer of the vulvo-vaginal gland, usually adenocarcinoma, also occur. The outlook is fatal, unless the condition is recognized and treated early. Two years is the usual course of the disease.

The treatment of cases of carcinoma of the vulva should always be wide surgical excision of the growth, excepting in cancer of the urethra and cancer of the clitoris close to the urethra. In both of these conditions radium treatment is best, because it usually does not destroy the function of the urethra. Surgical incision does destroy this function and this function cannot be replaced. Surgery may be preceded by radium application and followed by x-ray therapy. Cases of malignant disease of the vulva should be seen at least every three months or more often, if necessary.

Preventive Inoculation Among Nurses at Boston City Hospital:—Discussed by Dr. George P. Sanborn.

Gangrene of Leg Associated With Heart Lesion; Chondrodystrophia Fetalis:—Cases discussed by Dr. Martin J. English.

Teratoma Cyst of Buttocks:—Case discussed by Drs. Martin J. English and Otto J. Hermann.

Chronic Laryngeal Stenosis:—Cases presented and discussed by Dr. Edwin H. Place.

DR. E. P. JOSLIN:—Before the meeting is concluded I am sure I voice the opinion of all the doctors, who are here tonight, in expressing their appreciation of the City Hospital Staff in giving us this wonderful program. It has been quite an innovation for the Suffolk District Society, and it is an innovation we will want to repeat. The Committee and the City Hospital were unanimous in deciding to have this program. I am sure every one is glad to have come, and I want to congratulate the City Hospital on the demonstration they have given.

NEW ENGLAND SURGICAL SOCIETY

THE END RESULTS OF CHRONIC CHOLECYSTITIS*

BY EDWARD L. YOUNG, JR., M.D., F.A.C.S.†

THE chance for cure in any chronic disease is always less than the possibility of cure in the same disease when it is acute, and the more indefinite the symptoms the less is the likelihood of a complete relief of these symptoms. In some diseases it is a serious question whether we have any right to use the term chronic because the chronic state is often not primary but secondary to some other factor; for instance, the diagnosis of chronic appendicitis as a primary condition has been largely eliminated. When it is a chronic appendix, something else such as repeated acute attacks, cecal stasis, ptosis, or constipation is generally in the background. Whether or not the diagnosis of chronic cholecystitis should likewise be condemned was one of the reasons for beginning this study.

This paper is based on a study of all of the cases of biliary tract disease treated at the Massachusetts General Hospital for a period ending 1925 where the main classification in the hospital catalogue is chronic cholecystitis. No attempt has been made in the light of retrospective study or further knowledge of the cases to criticize this classification in any instance. The aim has been to see how these patients have fared and to see if it is possible to throw light on any of the factors leading up to success or failure of treatment. Moreover, in the light of recent studies in cholecystography as an aid to gall bladder diagnosis, it seemed worthwhile to have one more series of cases of this type where the diagnosis was based entirely on clinical evidence without the use of the dye. It is doubtful if any laboratory test can ever entirely supplant well established clinical evidence especially where, as here, the positive diagnosis must often depend on a negative finding. It has already been claimed by one investigator, somewhat rashly it seems to me, that a cure has been obtained in 100% of a series of cases where the Graham Test gave evidence of gall-bladder disease. If such were actually the case, there could be, of course, little use for such an analysis as this paper attempts as we would merely turn over a new leaf in our methods of diagnosis and in the light of this new knowledge become at once 100% accurate.

There were 300 cases in this series. Of these the end results were obtained in 115. 76 of these reported in person and were carefully questioned and examined either by myself or some other member of the gastro-intestinal clinic at the Massachusetts General Hospital. The remainder reported by letter.

There were 4 deaths in this number, a mortality rate of 1.3%. 2 died of peritonitis, 1 of hemorrhage, and 1 of pulmonary embolism. 7 others have died since of causes not connected with the operation and all of these were cured of the old symptoms.

Of these 115 cases 34 had stones present. This gives us at once a positive abnormal factor the removal of which should result in marked relief of symptoms. This is indeed the fact; all of them except 2 were cured. The 2 that continued to have symptoms had a sufficient reason for it, one because of the presence of duodenal ulcer, and the other because of reformation of stones in the ducts after the removal of the gall-bladder.

The results have been put in 3 groups: 1—cured: none of the old symptoms left; 2—relieved of the major part of the symptoms, but still with some factor left behind to bother them such as persistent slight indigestion or mild pain or distress at times. In this group also have been put 9 cases that had post-operative hernia and because of that have to wear support or have had to have further operations, and 3—cases that are the same or worse following operation. There are 70 in Group I, 25 in Group II, and 16 in Group III.

A more careful analysis of the 16 cases which interest us most reveal the following facts. At the time of operation the pathology noted was as follows: 2 showed the presence of stones, 1 with an accompanying duodenal ulcer. 1 other showed duodenal ulcer. 1 showed a duodenal diverticulum with an aberrant pancreas contained within it, which was removed at operation, 1 showed a polyp of the duodenum. 6 showed slight adhesions between the gall-bladder and the duodenum or stomach. 2 were reported as merely slightly thickened and 2 as having no pathology. Since that time the following facts have been brought out. 2 more have been shown to have duodenal ulcer and because of the continuity of symptoms throughout, the suggestion is that the ulcer was present at the time of operation. 1 has been shown to form stones in the ducts. She has been operated on twice since and is at present suffering from symptoms which suggest reformation. 3 have been studied within the past year and no cause for the symptoms can be found. 1 of the 16 reported that she had exactly the same symptoms only more severe for 4 years after operation but that for the past year she had been free of trouble. She then produced a small calcium oxylate stone which she said she had passed one year ago from her urinary bladder and very innocently asked if I knew what it could be. As her whole attitude was that of thankfulness for

*Read at the Annual Meeting at Manchester, N. H., October, 1927.

†For record and address of author see "This Week's Issue," page 775.

what had been done for her, the incident left a somewhat uncomfortable feeling behind. Of these 16, 6 were reported to have a chronic appendix which in the report of the operator was said to be sufficiently diseased to have caused all the trouble. Another black mark against this diagnosis as the removal carried no added benefit. It is also interesting to note at this point that in this whole series there was only one case who considered herself about 50% cured after the cholecystectomy who was entirely cured following the later removal of an appendix. Of these 16 cases where the gall-bladder was examined pathologically, all but 2 were reported to show evidence of slight inflammatory damage. 2 were reported normal. If now we compare the macroscopic and microscopic pathology of the gall bladders in those cases which were completely cured, we find that 2 had neither macroscopic nor microscopic pathology and 9 had no gross pathology or at the most only trivial adhesions, or questionable thickening, but microscopically the gall-bladder showed evidence of chronic inflammation. Of those relieved but not entirely cured, 1 showed no gross or microscopic pathology and 2 doubtful macroscopic and positive microscopic damage. Apparently the presence or absence of slight pathology at operation cannot be taken as a sure criterion of future relief.

The presence of an enlarged gland near the base of the cystic duct, the so-called "sentinel gland", has been used many times as evidence of pathology and a justification for cholecystectomy when nothing else is found and the gall-bladder feels normal. In this series the presence or absence of such an enlargement was mentioned 14 times. 13 times it was definitely enlarged and in these cases the end result fell into Group III in 8 instances. This is so large a percentage that it suggests a focus of trouble elsewhere than in the gall-bladder, the persistence of which may later keep up the symptoms. Once it was said to be absent and the patient has been entirely cured.

All of these cases with poor results had a cholecystectomy. This was the operation of choice in all but 7 of the cases. The 7 that had cholecystostomies were all cured without the need of any second operation.

The presence or absence of marked thickening of the pancreas was also looked for as having some possible relation to future trouble, but there was apparently no connection. One of the cases that was drained was treated in this way because of marked pancreatic thickening. That patient is cured. There were only 6 cases in all where the record noted the fact that there was thickening or nodularity of the pancreas. 2 of these have had some slight trouble since although they consider themselves cured by the operation. The other 4 have had no symptoms at all since being in the hospital.

35 out of this whole number have had some restriction in their diet since operation. Most of them have to be careful in relation to fats and fried stuffs but in a few instances there seem to be special articles which make trouble such as ice cream, walnuts, tomatoes.

After finding out those cases relieved and those not relieved, I tried to correlate this with the evidence of disease as given in the histories and examinations in the records. In doing this I have recognized the fact that hospital histories are not always as complete as they might be and that even when complete, the impression one gets from a written story without the patient may be very different from that obtained from the patient himself and the examination. Nevertheless, I put the stories into two groups; those where the evidence seemed satisfactory in retrospect and those where it was not. Of the 16 failures 14 had unsatisfactory histories. Of the 25 patients with slight symptoms remaining 10 had unsatisfactory histories and of the 70 cures 10 had unsatisfactory histories. Of this series 16 patients had had previous operations for the same condition without relief, 8 the removal of the appendix, and 8 drainage of the gall-bladder. These 8 cholecystostomies without relief balance the 8 cases of the series which were drained with complete relief.

In seeing and talking with the patients themselves, there were two rather striking things; one, the large number that had gained a great deal of weight over and above what would be expected from the benefit to their digestion. Approximately 40% had gained markedly in weight, many of them reporting 40 to 60 pounds and one as high as 70 pounds. Only 2 were lighter than they were before operation. The other was the length of time after operation during which the patients continued to gain. Although many of them said they were well within a few weeks, 25% report that they continued to gain for at least a year and a few of them longer.

Summary: The end results of 115 cases of chronic cholecystitis have been reviewed. 63% were cured, 15% were not cured, and 22% were relieved of their main symptoms.

The chief cause of failure was mistaken diagnosis; 25% of the cases having duodenal ulcer instead of cholecystitis. The more indefinite the symptoms and uncertain the diagnosis before operation, the greater the chance of failure.

There was no single bit of evidence which seemed definite enough as revealed at operation to tell whether or not the gall-bladder was the cause of trouble other than gross change in the gall-bladder itself. The removal of a slightly thickened, adherent gall-bladder did not cure in every case.

The presence of a "sentinel gland" did not necessarily point toward gall-bladder disease.

In conclusion it seems to me that the only justification for operation on the biliary tract

should be well established clinical and laboratory evidence that the gall-bladder is at fault; and that having made that diagnosis, it should be removed in the absence of other demonstrable pathology regardless of whether or not it seems diseased to the examining hand.

Discussion

Dr. David Cheever, Boston: We all know what a tremendous piece of work it is to make such a careful analysis of such a large number of cases and we are very grateful to Dr. Young for his important paper.

It seems to me worth while to inquire first whether or not there is such a pathological or clinical entity as chronic cholecystitis; and second, if there is such an entity whether it can be relieved or cured by cholecystectomy. The termination "itis" as in the word "cholecystitis" signifies inflammation but chronic inflammation may be of several different types in different organs and under different conditions; for instance, we have chronic cystitis of the urinary bladder characterized usually by the presence of pus but often with no fever—there chronic infection is the chief feature. Then we speak of chronic myocarditis which usually means a degeneration of the cells of the myocardium with a replacement of some of them by fibrous tissue —that is another form of chronic inflammation; similarly, we speak of chronic nephritis which is usually a chronic fibrosis of the kidney.

So it seems evident that we ought to have a definition of what we mean by chronic cholecystitis. I don't attempt to offer such a definition but it is evident that the term covers a variety of lesions—cases where there is a chronic infection, cases where a former chronic infection has died out leaving the gall-bladder thickened, [illegible]ly and adherent, and cases where the gall-bladder appears normal except for a little thickening but where it is affected in its concentrating power and its ability to empty itself. So there are many varieties and it is probable that operation will not relieve them all to an equal degree, so evidently the influence of the exact type of pathological lesion is very great.

Now consider the question whether chronic cholecystitis causes symptoms which can be relieved by operation. Take Dr. Young's figures: —115 cases were considered of which 34 should be thrown out at once because gall stones were present also. We know that every case of gall stones is associated in some degree with cholecystitis and it is merely a matter of the method of record-keeping if such cases are catalogued also as chronic cholecystitis but in our present inquiry they should be thrown out, which leaves 81 cases of which 16 were not relieved by operation.

Now of the cases that were not relieved no less than 4 were found later to have duodenal ulcer which, it may be assumed, was the real cause of the trouble; 1 case proved to have a duodenal polyp, another a common duct stone and another a renal calculus, all of which were overlooked. To these should be added 2 cases in which the gall-bladder showed no recognizable pathological lesion so that we have 9 cases of the 16 in which the failure to cure can scarcely be attributed to the removal of the chronically inflamed gall-bladder, leaving 7 cases in which the failure must be accepted. This constitutes a percentage of failures of only 8.6%—a pretty small percentage of failures in an abdominal lesion. Perhaps this is no higher than an inevitable percentage of neurasthenics in whom we are bound to make mistakes in any field of surgery.

Now the sentinel gland was spoken of. It drains the gall-bladder chiefly and the undersurface of the liver but we know that the reversal of the lymph stream is a common thing when the vessels become blocked by carcinoma or other conditions, so it is evident that this gland may be enlarged from infection from some other area than that usually tributary to the gland. For example, in cases of ulcer of the duodenum, the sentinel gland may be enlarged so we obviously cannot rely implicitly on the sentinel gland as indicating a lesion involving the gall-bladder or the liver.

Dr. Young says that the gall-bladder should be removed if the clinical and laboratory evidence is against it even though at operation it shows no recognizable pathological condition. I do not subscribe to that. I think if you operate on the case and have a good chance to examine the gall-bladder, if it is absolutely normal to inspection and palpation and if it can be emptied and you can, therefore, be reasonably sure that no calculus exists in the cystic duct or neck and if the common duct feels normal, I do not feel it is justifiable to remove the gall-bladder. True, in such a case it will usually be a very easy thing to do and probably in such cases there will be nearly 100% of operative recoveries but if you do remove such a normal gall-bladder you are not likely to get a symptomatic cure and you will discredit surgery. I have done this more than once. I always feel cheap when I do it.

I think the mortality of 1.3% is an extremely good one and just what would be expected in any first-class hospital. I am surprised at the occurrence of 2 cases of fatal peritonitis, which is not usually much to be feared in chronic cholecystitis. I think that one death from hemorrhage is quite unusual unless it was due to hemophilia or the patient was jaundiced. There is only one source of blood supply to the gall-bladder—the cystic artery—which is a little vessel lying in a definite place except for certain common and simple anomalies, so one ought not often to get hemorrhage from the cystic artery

unless there is a hemorrhagic diathesis. On the other hand, it strikes me as unusual that there should have been no operative death from pneumonia. The 9 cases of post-operative hernia are regrettable—I may have a similar record but I feel that with careful measures of closure we ought not to have such a high percentage of post-operative hernias.

DR. FRANK H. LAHEY, Boston: I do not feel that I can tell whether or not a gall-bladder is normal from its external appearance and at times even after palpation of its walls. This is particularly true of the cholesterol gall-bladder and it is certainly true that errors in cholesterol metabolism are at present the best explanation of the production of gall stones. We know that we have seen every stage in the production of the cholesterol stone from the lipoid deposits in the polypoid projections of mucosa, on to the fine sand-like stones of cholesterol, which one could not feel, up to the large and numerous pale cholesterol stones which are readily palpable. We know that these cholesterol deposits are not associated with inflammatory reactions, and we know that when inflammatory reactions appear, cholesterol deposits are not found in the gall-bladder wall. We know that with jaundice we have a high cholesterol accumulation in the blood, and that this cholesterolemia is also found in pregnancy and diabetes, both conditions in which gall stones are not uncommon. All of these facts point with strong suspicion, as I have already stated, to the fact that the cholesterol gall-bladder is the early gall stone gall-bladder.

Now the typical cholesterol gall-bladder, even with well-developed small, non-palpable cholesterol stones, has a smooth, normal appearing external surface. This is the point which I wish to make from our experience, if you have operated upon a patient after adequate examinations and with symptoms suggesting a gall-bladder and of sufficient degree to lead you to operate, and then because the external appearance of the gall-bladder is normal or its palpation does not show stones, you do not remove the gall-bladder and do not find an explanation for the symptoms, and following operation the symptoms persist,—how can you say that they are not due to the gall-bladder which you did not remove? It must be admitted, also, that one sees a gall-bladder of this type containing cholesterol stones that empties and fills normally with the Graham test. We know from personal experiences with this test that it is fine when it correlates with the history, but we must not let the fact that the gall-bladder is of normal contour and empties and fills deter us from operation, when in spite of this there are persistent symptoms of gall-bladder disease or obstruction.

I must say I cannot differentiate some pathological gall-bladders from their external appearance; so our position should be this:—that the symptoms of cholecystitis and the cholesterol gall-bladder are vague; they are not typical; there is no entity of symptoms that you can place your fingers on, as you so frequently can in gall stones; so errors in diagnosis must be great, and we must be extremely cautious and critical in the diagnosis.

We must not operate on these cases without eliminating other things, and not without persistent and justifiable symptoms, but when we do, and when we have critically studied them, then, when they are operated I think it would be a mistake to leave these gall-bladders behind, and I think that the penalty of taking them out will be less than the penalty of leaving them in.

By the early removal of diseased gall-bladders, one eliminates the train of symptoms which follows late removal of gall-bladders when there co-exists cholecystitis and pyloric adhesions, pancreatitis and duct infections.

DR. ERNEST L. HUNT, Worcester: A word about the post-operative hernias—I am more impressed by Dr. Young's figures than by Dr. Cheever's estimate. In my own follow-up I have been surprised by the number of post-operative hernias and I would say that Dr. Young's figures are not an exaggeration of the figures in general. I think that in the presence of real gall-bladder pathology when we get rid of the gall-bladder we may generally be satisfied not to remove the appendix especially if it is normal to palpation.

I have used the short, Ravdin, incision with considerable satisfaction believing that the danger from leaving in the normal appendix is less than that from the increased liability to post-operative hernia incident to the long incision and its interference with the innervation of the upper segment of the rectus.

DR. D. F. JONES, Boston: I am sorry but I must disagree with Dr. Lahey's point of view in regard to chronic cholecystitis. We surgeons have been discussing the disease for some years but I doubt if anybody in this assembly can give a satisfactory description of the disease. It is my opinion that a gall-bladder which has a few round cells in the wall does not necessarily cause the indefinite group of symptoms which we say are due to chronic cholecystitis. I have been unable to find a condition at operation which seems to definitely indicate a chronic cholecystitis.

Dr. Lahey has suggested many serious conditions such as pancreatitis which this disease may cause, but is it not more likely that a large organ like the liver which is receiving bacteria all the time is much more likely to cause these diseases. Have we not got the cart before the horse when we take the gall-bladder alone into consideration?

If we admit that there is such a condition as

chronic cholecystitis, is it a serious disease? I believe it is a disease which rarely demands an operation. If patients with chronic cholecystitis, except the severe cases which are very easily diagnosed, were asked if they were uncomfortable enough to demand an operation, few would ever be operated upon.

Dr. Lahey has pointed out that many diseases may be caused by chronic cholecystitis, yet I believe that few surgeons would be operated upon for chronic cholecystitis unless they were sufficiently uncomfortable to demand an operation.

The cholesterol, or strawberry gall-bladder is said to be a serious condition, for it causes many symptoms and may be the cause of gall stones at some future time, but should we operate for fear that gall stones may be formed. The strawberry gall-bladder is not such a serious condition probably as it was considered at one time, at least some members of the Mayo Clinic do not take it so seriously as formerly.

It is probable that chronic cholecystitis, that is the type which it is difficult or impossible to distinguish at operation, is not a serious disease. We can, therefore, take sufficient time to determine as to whether operation is absolutely necessary or not, and should we not do this when Judd of the Mayo Clinic and many others admit that the results of operation are very disappointing except in those cases in which there are definite attacks of pain.

If we consider Dr. Young's statistics we find that but 50% of the chronic cholecystitis cases were cured, and these include all varieties of chronic cholecystitis.

Perhaps an important point to consider is that we shall not have any incentive to look for the real cause of symptoms if we believe that a perfectly normal appearing gall-bladder can cause serious symptoms. There are many conditions to be looked for when the chief symptom is epigastric pain, such as a duodenal or gastric ulcer which has not been shown by the X-Ray, pancreatitis, small intestine obstruction, diaphragmatic hernia, arthritis, neuritis caused by the pinching of the intercostal nerve between the lower ribs, and bad posture.

The milder cases of chronic cholecystitis or supposed chronic cholecystitis should not be taken too seriously. Let us first determine what pathological condition of the gall-bladder deserves the name of chronic cholecystitis.

Dr. P. E. Truesdale, Fall River: All the evidence thus far indicates that the method of dealing with border-line cases of cholecystitis is still a mooted question.

At the operating table the surgeon is often influenced in his attitude toward the doubtful gall-bladder by what other lesions he finds or fails to find. If a carefully taken history and a conscientious study of the case has focussed attention on the gall-bladder, the appearance of the gall-bladder need not be very bad to warrant its removal, especially if exploration of the abdomen fails to reveal another lesion to account for the patient's symptoms. After long periods of invalidism patients themselves or members of their families implore the surgeon to be radical in undertaking measures to bring about cure; however, he cannot take seriously the gesture of a discouraged patient or relative.

After this splendid symposium we are still at sea on the perplexing problem of treating the chronic gall-bladder. In all these cases we will do well to give the patient as much consideration as the gall-bladder.

Dr. Edmund H. Stevens, Cambridge: There are many operations done by surgeons today that were not done twenty years ago. They sometimes take out tonsils and ream out the nose when, I believe, there is no need of it, and the patient is not improved by such an operation.

Now this matter of gall-bladder disease—there are many cases that come on with an attack of fever and a palpable gall-bladder. The patient usually gets over such an attack but is likely to have a recurrence of the trouble and unless relieved by a surgeon there is danger of the attack proving fatal. Such a condition may be associated with gall stones or simply an inflamed gall-bladder. At the present day these cases usually fall into the hands of a surgeon and the patient recovers.

The matter of taking out gall-bladders—at first we drained the majority of gall-bladders; some cases diagnosed as gall stones proved to be pancreatitis. It has seemed to me that often the draining of the gall-bladder would ward off an attack of pancreatitis; of course in a case of contracted gall-bladder containing stones where the gall-bladder does not function it is better to have it removed. When a woman comes to you and says she has tenderness in one spot and has had this for a long time, her color is sallow, she is thin, and has chronic indigestion, you determine that this is a case for a surgeon. Such cases usually get well when the gall-bladder is removed. These are cases of chronic cholecystitis. I have examined many women who have come to me for an opinion and found the symptoms just spoken of. These cases generally recover if they fall into the hands of a good surgeon.

Dr. Lyman Allen, Burlington, Vt.: In Dr. Young's paper he says that the patients whose gall-bladders he drained all recovered. I think that in a good many cases drainage of the gall-bladder is the better operation. (We do not remove the urinary bladder.) Cholecystostomy is certainly a simpler operation than cholecystectomy, and the mortality is lower. That does not mean that I would drain a gall-bladder that ought to come out. The disease is usually not primary in the gall-bladder. Why take out the thing that is not the cause? Draining as well as cholecystectomy relieves the probability of pancreatitis. If you take the gall-bladder out,

the ducts are going to dilate and do the work of the gall-bladder. One case was reported by Dr. Young in which gall stones were formed after cholecystectomy. So you do not stop the formation of gall stones by removing the gall-bladder. Instead of the decision that *every* gall-bladder ought to be taken out or left alone, I feel strongly that there are many cases in which cholecystostomy is the better operation, partly because in certain cases it is the safer operation.

Dr. George C. Wilkins, Manchester, N. H.: Most of the discussion so far has been carried on by men who are associated with large clinics. These men don't have to live with the patient. We do. And it seems to me the decision whether a questionable gall-bladder should be removed depends on something else, and that is the welfare of the patient, not whether we are curing the pathological condition, but whether we are making the patient better symptomatically and functionally. That is the thing we have to live with when we see these patients afterward.

I think that too many times the pathology is removed without reference to the patient and to the patient's welfare afterwards. When a patient is coming around to see us as we see them here, for a number of years afterwards, we like to have that patient well, and to come back to us and tell us that our treatment by operation or lack of operation has helped them. I think the advisability of operation should be judged with these points in mind in the presence of mild pathology.

Dr. David Cheever, Boston: When Dr. Allen said "we don't remove the urinary bladder," my neighbor said "we would if we could, very often!" I do not want my attitude to be misunderstood. Dr. Lahey said "if the gall-bladder looked normal and if it had no adhesions and if it emptied well." He didn't mention "feeling," but he would be the first to palpate the gall-bladder.

Now he described the cholesterol gall-bladder as having an extensive deposit of cholesterol in the mucosa and a polypoid condition, and I maintain that that could not exist without thickened gall-bladder walls. Now I classify a thickened gall-bladder as a pathological gall-bladder, but I do not believe that the absolutely normal appearing gall-bladder without adhesions, slate colored, with no thickening of the wall on palpation, is a cholesterol gall-bladder.

Dr. Frank H. Lahey, Boston: I am glad to have Dr. Jones disagree with me. It is a very healthy thing for me and for you, also, to listen to these disagreements.

I would not have you think that I would advocate operating upon everyone who has pain or discomfort of any degree in their right upper quadrant. The point I have tried to make is that the diagnosis of chronic cholecystitis is difficult and uncertain, which makes it all the more necessary that we should be extremely painstaking and critical in making it, but that when we make it and operate, provided no explanation for the symptoms can be found, the fact that the gall-bladder appears normal on the outside should not prevent us from taking it out.

This situation is in some ways like that of chronic appendicitis, or perhaps non-acute appendicitis. We all know how abused this diagnosis is, and that a great many appendices are taken out unnecessarily under this diagnosis. Nevertheless, this should not lead us to the position that there is no such condition, because that is not the fact.

I recall once having a most heated private argument with Dr. Jones about the wisdom of the employment of a plaster spica in a hypothetical case of fractured femur, I advocating and he opposing. After a lengthy disagreement, either he asked me or I asked him what type of fracture we were discussing. Upon our ascertaining that I was discussing a transverse fracture and he an oblique one dissension was eliminated and our agreement complete. Such are often the foundations of disagreement. The fundamental features, it appears to me, are—what are the criteria of pain and distress? I have already stated the basic principle of my contention that the vagueness of the symptoms of gall-bladder disease without demonstrable stones necessitates the most painstaking elimination of other sources for the symptoms, and the most critical study before operation is undertaken. When this is done and no other explanatory pathology is found, no matter how normal the outside of the gall-bladder looks, it should be removed once operation is undertaken and no other pathology found.

Dr. E. L. Young, Jr., Boston (closing): I don't know as I have very much to add. I am grateful to the men who spoke as it helped to clarify my own somewhat chaotic ideas.

After Dr. Cheever's revision of my figures one way and Dr. Jones' revision the other way I am convinced that you can make statistics come out any way you want to.

I remember in my course at college I was taught, "get your premises first" and I think the premise in this discussion ought to be this, as Dr. Stevens and Dr. Wilkins brought out—that the patient in the chronic condition is the one who is going to say in the end whether the thing was a cholecystitis or not. They do not care whether the pathologist found anything under the microscope or not; they want to be cured. You may have to use months of clinical observation. Often when patients come to us for chronic cholecystitis they know that there is an X-ray and a Graham test, and if you don't tell them within a short time what they have got, they will go somewhere else. You can't tell a patient that you don't know what is the matter and that you are entitled to remain ignorant until a long period of clinical study shall tell the story.

End of New England Surgical Society Section.

TOXEMIA IN PREGNANCY

BY REGINALD D. MARGESON, M.D., F.A.C.S.*

THE fifty-six cases of toxemia subsequently described in this article have been taken from private practice, and represent patients that came to the author for delivery or were seen by him in consultation. While not a large series, it will perhaps supplement the groups studied by Kellogg and others interested in the subject.

Many of these patients received good prenatal care. One had no prenatal care, a few were neglected, and three refused advised treatment. Had proper prenatal care been given to this latter group, or had the patients accepted the treatment advised, the outcome, both to mothers and foetus, might have been much different.

In a number of cases there was a family history of toxemia, most often of the patient's mother. The data, however, are not complete enough to form any conclusion.

Fibroids were noted in five cases, or in 9% of the series. There were twins in three cases, or in 5% of the series. Over 70% were primiparae, and more than 50% were between the ages of twenty-five and thirty-five years.

The cases have been tabulated below by number; pregnancies accompanied by a toxemia in the wider spaces in the chart, pregnancies without toxemic symptoms in the narrower spaces. From left to right will be found Case Number, Date of Delivery, Patient's Age, Para, Highest Recorded Systolic Blood Pressure, Amount of Albumin in Urine, Severity of Toxemic Symptoms, Convulsions, Recurrent Toxemia, Mode of Delivery, Foetal Mortality, Maternal Mortality, Premature Separation of Normally Implanted Placenta, Type of Toxemia, and Type of Prenatal Care. (See Table.)

Some of the above cases warrant a more detailed description, which follows:

CASE 1. Neosalvarsan had been given before marriage for a positive Wassermann. Wassermann was negative at the time of marriage and when pregnant. Two years after the delivery the blood pressure was 110 and the urine negative. The fibroid was then removed and an uneventful convalescence followed.

CASE 3. In the seventh month of her third pregnancy, patient under my care was taken with severe abdominal pain and slight bleeding. At 2:00 A. M. on January 17, 1922, a local physician made a vaginal examination, gave her a quarter grain of morphia, and told the family that there was no need of calling me until later. I saw the patient at 8:00 A. M. There was little doubt as to a diagnosis of separated placenta. She was immediately taken to a hospital, where a No. 4 Voorhees Bag was inserted and expelled two hours later. There was an easy delivery, by version, of a seven months dead baby, the placenta being entirely separated. Following delivery the patient was in excellent condition. Later she developed streptococcus puerperal septicemia and died on the twelfth day. At the time there were two cases of streptococcus puerperal infection in this hospital, both of which died. There was a history that the patient's mother had convulsions when the patient was born.

CASE 6. I was called to see this case at home twelve hours before delivery. Patient was in active labor, and not having convulsions. The baby was alive, the cervix dilated three fingers. The family were ignorant people and refused to allow delivery or any procedure that would hasten it. In ten hours the patient was having convulsions and two hours later was delivered of a still-born baby.

CASE 8. This patient was a typical chronic nephritic. Her third pregnancy was terminated by bag and high forceps on January 19, 1922, and was an eight pound girl, apparently normal. Within twelve hours, however, it was noticed that the child was suffering from a flaccid paralysis of both legs and of the muscles below the waist. X-ray was negative. It would seem that there must have been some congenital defect in the cord. The child is still living, the paralysis has persisted.

CASE 20. A chronic nephritic with a superimposed severe acute toxemia in her second pregnancy. Vaginal caesarean was performed and a living four and a half pound baby delivered. Seven weeks after birth, unfortunately, the baby had a bronchopneumonia and died.

CASE 26. This patient was a very obese woman, and during the second month of her second pregnancy developed a rapid pulse (110 to 130), and a metabolism of plus 45. Therapeutic abortion was advised and refused. September 27, 1926, she suddenly became very sick, with a temperature of 104 and pulse of 160. A manual dilatation with extraction of a dead five months foetus was easily done. On the twelfth day, against advice, she left the hospital. A few days later a large breast abscess was drained. She died on October 14, 1926, of what seemed to be a general pyogenic infection with a questionable liver abscess.

CASE 27. The urine of this patient, a primipara, had not been examined for six weeks. She was in a poorly equipped hosiptal, was having convulsions, and was not in labor. The cervix was rigid; the abdomen very large. Twins were not diagnosed. An abdominal caesarean was performed. One twin lived three months, the other is still living. The mother died in eighteen hours. Proper prenatal care in

*For record and address of author see "This Week's Issue," page 775.

similar cases would often prevent serious complications and would lower maternal mortality.

CASE 34. A case of low reserve kidney or hydronephrosis: At first examination, when two months pregnant, there was a slight trace of albumin present. This persisted during pregnancy and is present in the same amount now. The blood pressure was always low, 100 to 110 systolic. Marked progressive swelling of the legs during pregnancy was her only symptom. The baby is living and well.

CASE 36. This case was three weeks over-due and refused to go to a hospital until she went into labor. I was called after an unsuccessful attempt at delivery had been made under ether. I was forced to do an embryotomy on a very large dead baby. The mother died of shock and probably a ruptured uterus. Education, and insistence upon toxemic cases going to a hospital might prevent such disasters.

CASE 40. This case died of uraemia twelve days postpartum. She was a chronic nephritic, the baby still-born at term.

CASE 43. This was a mild toxemic case, with stones in both kidneys. She was sent to me with the diagnosis of intestinal obstruction, and because of severe intestinal symptoms labor was induced. Intestinal obstruction was not the correct diagnosis, but because of severe abdominal distention, pain, and developing toxemia, it was necessary to deliver at seven months. The baby died in three days.

CASE 44. Patient's first delivery was a classical abdominal caesarean section, performed because of a contracted pelvis rather than the toxemia, after an eight hour test labor. Afebrile convalescence followed and she left the hospital in two weeks. The second pregnancy resulted in a subserous rupture of the original caesarean scar, directly over the center of the placenta. The baby was alive. There had been so much bleeding into the broad ligaments and Space of Retzius that it was deemed advisable to remove the uterus. An uneventful convalescence ensued, and both mother and baby left the hospital in sixteen days.

CASE 49. This was a very interesting nephritic, who had been under the care of an expert medical man since the birth of her second baby. She went through the third pregnancy without operative intervention, without developing severe toxemic symptoms (one of the few chronic nephritics in which the kidney condition was not aggravated), and was delivered at term of a healthy normal baby.

CASE 50. A case that apparently developed a serious chronic nephritis after the birth of her first child. She had the very best medical care, but two years previously was not expected to live. With the second pregnancy, the foetus died at four and a half months and was expelled normally. Patient is living with very little increase in nephritic symptoms.

CASE 56. This was one of those cases with a steadily rising blood pressure, from 120 systolic at five months to 160 at time of delivery. There was no albumin in the urine. There were mild toxemic symptoms. This case would probably fall into the group of low reserve kidney. The baby is living and well.

CONVULSIONS

Convulsions took place in nine cases, eight primiparae, and one multipara, with one death, a primipara. That good prenatal care had been given to the majority of these cases seems to be the only reason for the low mortality. The toxemic symptoms of the patient that died were unrecognized until a few hours before convulsions. A study of these cases indicates that the toxemics who have frequent examinations and who develop convulsions suddenly because of an acute fulminating condition, have a much better chance of surviving, if properly treated, than those who have not had this care and who have gradually developed a severe toxemia. These latter cases have become so thoroughly toxic they do not respond to treatment, hence there is a resulting high mortality.

CLASSIFICATION OF TOXEMIAS

Tabulating the toxemias, we have:

Acute Toxemia	44 cases (79%)	
Chronic Nephritic Toxemia	12 cases (21%)	28% of recurrence
Recurrent Toxemia, Non-nephritic	5 cases (11%)	28% of recurrence
Recurrent Toxemia, Nephritic	11 cases (100%)	28% of recurrence
Acute Toxemia, babies living	26 cases (55%)	
Recurrent Toxemia, babies living	5 cases (100%)	
Death of foetus	21 cases (45%)	
Chronic Nephritics, babies living	22 cases (38%)	
Death of foetus	36 cases (62%)	

(This includes all recorded deliveries)

By appropriate treatment, the symptoms in the mild toxemic cases may usually be arrested and lessened, and thus some cases may be held in check that otherwise would surely become seriously toxemic. By appropriate treatment is meant a minimum of salt, low protein diet, catharsis, rest, frequent urine examinations (qualitative and quantitative), frequent blood pressure readings, and prompt delivery if symptoms increase.

FOETAL MORTALITY

In the above fifty-six cases there were recorded one hundred fifty-six pregnancies. Including the three sets of twins there were one hundred and fifty-nine babies. Of this number ninety-eight babies lived. Sixty-one pregnancies terminated in death to the foetus. The series included the following foetal deformities:

Foetal Deformities Six cases—eight babies 10%	1 With paralyzed legs (Case No. 8)
	1 Anencephalic (Case No. 8)
	3 Hydrocephalics (1 set twins) (Cases 21 and 28)
	1 Monstrosity (Case No. 42)
	1 Idiocy (Died at six years of age) (Case No. 47)
	1 Spina Bifida (Died in three weeks) (Case No. 54)

Regardless of the prenatal care, foetal mortality is high in toxemia. In the chronic nephritics it steadily increases in repeated pregnancies. In the acute nephritics the prognosis in future pregnancies is good unless the mother is

METHOD OF DELIVERY IN SEVENTY-SIX PREGNANCIES ACCOMPANIED BY TOXEMIA, AND SEVENTY-NINE RESULTS

- **Abdominal Caesarean** — 9
  - 8 alive and well
  - 1 still-born
  - 1 twin died at three months
- **Vaginal Caesarean** — 3
  - 1 at six and a half months died
  - 1 at seven months died in six weeks of pneumonia
  - 1 at four and a half months macerated
- **Manual Extraction** — 8
  - 4 still-born at term (1 set twins—hydrocephalics)
  - 2 five months foetus
  - 2 four and a half months foetus
- **Forceps** — 25
  - 18
    - 17 alive and well
    - 1 with paralyzed legs
  - 7
    - 1 died in ten days of septicemia
    - 1 died in three days of foetal toxemia
    - 2 died in three days of cerebral hemorrhage
    - 1 macerated at term
    - 2 eight months foetus died
- **Normal Deliveries** — 23
  - 12
    - 11 alive and well
    - 1 hydrocephalic
  - 11
    - 1 still-born at term
    - 1 at eight months, 1 at seven months, 1 at nine months — still-born macerated
    - 1 died at three months after birth
    - 6 four and a half to six and a half months foetus
- **Version** — 8
  - 2 alive and well
  - 6
    - 1 at seven months still-born
    - 1 at seven months died
    - Twins at six months died
    - 1 at term died in three days, 1 at term died in four days — foetal toxemia
- **Bag Used** — 9
  - 3 forceps
    - 2 alive and well
    - 1 with paralyzed legs
  - 2 normal deliveries
    - five months foetus
    - six and a half months foetus
  - 4 version
    - 1 alive and well
    - Twins at six months
    - 1 at seven months died
  - 1 vaginal caesarean at four and a half months
- **Therapeutic Abortion** — 2
  - 1 at three months
  - 1 at two months

unfortunate enough to suffer from a premature separation of the normally implanted placenta.

MATERNAL MORTALITY

Case Number	Cause of Death	Time	Type of Prenatal Care
3	Separated placenta Puerperal septicemia	12 days	Good
26	Pyogenic septicemia Chronic nephritis	17 days	Refused treatment
27	Eclampsia, caesarean section Acute toxemia	18 hours	Poor
36	Shock; ? ruptured uterus Chronic nephritis	2 hours	Refused treatment
40	Uraemia Chronic nephritis	12 days coma	Fair

Three of the maternal deaths were chronic nephritics. Repeated pregnancies in chronic nephritics are sure to increase the maternal mortality.

The author finds, in analyzing four hundred consecutive cases that came to him for delivery (this does not include cases seen in consultation or cases sent because of toxemic symptoms), that twenty-two, or 5½%, developed toxemia. Tabulating these cases, which have been marked in Roman numerals in the above series, we have:

- Total number of cases — 400
- Developed Toxemia — 22 (5½%)
  - Acute Toxemia — 17 (4¼%) — 77% of the toxemics
  - Chronic Nephritic Toxemia — 5 (1¼%) — 23% of the toxemics
  - Recurrent Toxemia, Non-nephritic — 2 (12%)
  - Recurrent Toxemia, Nephritic — 5 (100%)

  (Recurrent Toxemia, Non-nephritic + Recurrent Toxemia, Nephritic) — 32% of recurrence

77% acute toxemias is undoubtedly a little too high, as some of these cases in time would become chronic nephritics.

The 12% recurrent toxemic group is too low, as some of the cases have not had pregnancies following the toxemia. This percentage would probably be nearer 15% or 20%.

One woman in eighteen given prenatal care developed toxemia. Eliminating the chronic nephritics, there would be one in twenty-three.

Prenatal care is imperative. If given, it will reduce eclampsia and maternal mortality to a minimum. When toxic symptoms appear, the patient should be treated in a hospital. If the toxemia is mild and occurs late in pregnancy, the prognosis is excellent for both mother and child. Operative intervention is not required unless symptoms increase in severity. If they do increase in severity, the patient should be delivered, in most instances by induction of labor and the vaginal route.

In a toxemia developing early, prior to six and a half months, the prognosis for the baby is extremely poor. Seldom is it wise to allow the pregnancy to continue with the hope that by tiding the mother over to eight months or longer you may have a larger baby and one that will survive. The risk to the mother is too great. Most of them, in spite of the best treatment, show increasingly severe symptoms. There is danger of eclampsia. Certainly the toxemia does not lengthen the patient's life; it probably shortens it. And, in the end, when everything possible has been done, the babies, being thoroughly toxic, seldom live. Many die within a few days, or a few weeks at the most.

All of these cases can be delivered by vagina. Cases developing severe toxemic symptoms suddenly, regardless of the duration of the pregnancy, should be delivered as soon as possible, and, when chronic nephritics or multiparae, by vagina.

A primipara, in labor with a dilatable cervix, or with a dead baby, or if it seems from the symptoms and examination that such a patient will not have convulsions for eighteen or twenty-four hours, may be delivered from below. If the patient is at or near term and having convulsions, or on the verge of having convulsions, with the baby alive, an abdominal caesarean section is justifiable. I am referring, of course, to primiparae that have had good prenatal care, as in Case No. 12 in the above series. Two days earlier her blood pressure was normal, the urine negative, and toxic symptoms absent, yet she had convulsions before they were able to get her to the hospital. She was not in labor, the cervix was rigid, the baby alive. At term there was an acute fulminating toxemia. I did an abdominal caesarean section. Both mother and baby are living. There have been no pregnancies since.

Neglected primiparae having convulsions, who in many instances have been developing a progressive toxemia for a considerable period of time, are very poor risks. It is a question whether they should be delivered from above or below; the mortality is very high regardless of how they are delivered. As far as the baby is concerned, its chances are better by caesarean section. Case No. 27 will illustrate this type. With adequate prenatal care, the number of such cases will be greatly reduced. Unless the symptoms are mild and easily controlled, the patient should be put into a hospital and delivered as soon as possible.

There are a few cases in which there is a slight trace of albumin during the entire pregnancy; rarely are there any casts; the blood pressure remains low; there are very mild toxemic symptoms. There are also a few cases showing a steady rise in blood pressure; with no albumin; and with only mild toxemic symptoms. In the former the term hydronephrosis is commonly used, and such cases are illustrated by Case No. 34; the latter by Case No. 56. They are probably cases of low reserve kidney. Both types require careful watching, but seldom surgical intervention.

CONCLUSIONS

(1) Cases developing toxemic symptoms should be placed in properly equipped hospital.

(2) Mild toxemias call for careful expectant treatment; severe and early toxemias for prompt delivery.

(3) Vaginal delivery is the choice in most cases; abdominal caesarean section in primiparae developing an acute toxemia, with living babies beyond the eighth month, and not in labor, where a living baby is greatly desired.

(4) 5%, or one in eighteen or twenty pregnant women develop toxemic symptoms; eliminating the chronic nephritics, 4%, or one in twenty-two to twenty-five, despite the best prenatal care.

(5) Mild toxemic symptoms reoccur in 15% to 20% of cases that have had a previous acute toxemia.

(6) Repeated pregnancies in chronic nephritics are accompanied by a steadily increasing foetal and maternal mortality.

(7) Delivery before severe toxemia develops will reduce maternal mortality.

CASE	DATE of DELIVERY	AGE	PARA	B.P.	URINE	SEVERITY of TOX. SYM.	CONVULSIONS	REC. TOX.	MODE of DELIVERY	BABIES L.	BABIES D.	MATERNAL DEATHS	SEP. PLA.	TYPE of TOX.	TYPE of PRENATAL CARE
I 1	9-25-17	27	†	140	S.T.	MILD			V.	✓				A.T.	GOOD
2			†-VI			MILD			N.	6				C.N.	
			VII-XV			MODERATE			N.		9				
	10-30-17	34	XVI†	170	L.T.	MODERATE		✓	M.E.		S.B.				GOOD
II 3	1-9-18	20	†	160	L.T.	MODERATE			L.F.	✓				A.T.	GOOD
	1-14-20	22	††	120	0	0			N.	✓					GOOD
	1-17-22	24	†††	124	0	0			B.V.		S.B.	✓	✓		GOOD
III 4	5-31-18	28	†	180	L.T.	MODERATE			L.F.	✓				A.T.	GOOD
	4-11-20	30	††	120	Y.S.P.T.	0			N.	✓					GOOD
	6-10-24	34	†††	148	S.T.	MILD		✓	N.	✓					GOOD
IV 5	8-18-18	25	†	150	L.T.		P.P. ✓		N.	✓				A.T.	GOOD
	6-30-21	28	††	126	0	0			H.F.	✓					GOOD
	5-28-23	30	†††	118	0	0			N.	✓					GOOD
6	8-20-18	20	†	180	SOLID	SEVERE	✓		N.		S.B.			A.T.	FAIR
7	10-24-18	30	†	140	L.T.	MILD			L.F.		S.B.			A.T.	NONE
V 8	10-25-18	26	†	160	L.T.	MODERATE			H.F.		✓			C.N.	GOOD
	2-21-20	27	††	140	L.T.	MODERATE		✓	T.A.		✓				GOOD
	1-19-22	29	†††	200	SOLID	SEVERE		✓	B.H.F.	✓					GOOD
VI 9	1-28-19	30	†	160	L.T.	MODERATE			B.H.F.	✓				A.T.	GOOD
10	1-5-21	28	†	150	S.T.	MILD			L.F.	✓				A.T.	GOOD
11	1-11-21	34	†	150	S.T.	MILD			H.F.		✓			C.N.	GOOD
	10-3-24	37	††	160	S.P.T.	MILD		✓	L.F.	✓					GOOD
VII 12	8-5-21	21	†	150	L.T.	SEVERE	✓		A.C.S.	✓				A.T.	GOOD
13			†-IV			0			N.	4					
	10-7-21	35	V	175	L.T.	SEVERE			M.D.V.		✓			A.T.	POOR
	3-4-23	37	VI			0			N	✓					GOOD
VIII 14	4-8-20	34	†			0			N	✓					POOR
	3-2-22	36	††	140	S.P.T.	MILD			N	✓				A.T.	GOOD
15	10-1-23	31	†	200	L.T.	SEVERE								A.T.	

VIII	4-8-20	34	T			0			N	✓					POOR
14	3-2-22	36	TT	140	S.P.T.	MILD			N	✓				A.T.	GOOD
15	10-1-22	31	T	200	L.T.	SEVERE			A.C.S.	✓				A.T.	POOR
IX	12-25-22	30	T	200	L.T.	MODERATE			L.F.		✓			A.T.	GOOD
16	11-20-25	33	TT	120	0	0			N.	✓					GOOD
	6-4-27	35	TTT	118	0	0			N.	✓					GOOD
X	7-5-23	36	T	240	SOLID	SEVERE			V.C.S.		✓			C.N.	GOOD
17	8-25-26	39	TT	188	L.T.	SEVERE		✓	B.N.		✓				GOOD
	5-19-20	23	T	130	0	0			N.	✓					GOOD
18	8-24-23	26	TT	150	S.T.	MILD			L.F.	✓				A.T.	GOOD
XI	2-28-24	27	T	140	V.S.T.	MILD			L.F.	✓				A.T.	GOOD
19	3-19-27	30	TT	138	V.S.T.	MILD		✓	N.	✓					GOOD
XII	5-19-24	35	T	164	S.T.	MODERATE			V.		✓			C.N.	GOOD
20	12-8-25	36	TT	240	L.T.	SEVERE		✓	V.C.S.		✓				GOOD
XIII	8-22-24	35	T	150	S.T.	MODERATE			M.E		T. S.B			A.T.	GOOD
21	12-25-24	25	T	160	L.T.	SEVERE			B.V.C.S.		✓			C.N.	GOOD
XIV	7-22-25	26	TT	200	L.T.	SEVERE		✓	M.D.E.		✓				GOOD
22	10-14-26	27	TTT	170	L.T.	MODERATE		✓	N.		✓				GOOD
	3-11-27	28	TV	150	S.T.	MILD		✓	T.A.		✓				GOOD
			T			0			N.	✓					GOOD
23			TT			0			N.	✓					GOOD
	7-15-25	28	TTT	220	SOLID	SEVERE			B.V.	✓				A.T.	GOOD
24	7-26-25	28	T	150	S.T.	MILD			L.F.	✓				A.T.	GOOD
25	9-15-23	21	T	140	S.T.	MILD			N.		S.B.		✓	A.T.	GOOD
	2-4-25	23	TT	134	0	0			D.C. Misc.		✓				GOOD
	6-13-26	24	TTT	120	0	0			N.	✓					GOOD
26	12-25-25	21	T	140	S.T.	MODERATE			A.C.S.		S.B.			C.N.	GOOD
	9-27-26	22	TT	140		SEVERE		✓	M.D.E		S.B.	✓			GOOD

26	12-25-25	21	$\dot{T}$	140	S.T.	MODERATE			A.C.S.		S.B.			C.N.	GOOD
	9-27-26	22	$\dot{T}\dot{T}$	140		SEVERE		✓	M.D.E		S.B.	✓			GOOD
27	11-21-25	23	$\dot{T}$	180	SOLID	SEVERE	✓		A.C.S.	T ✓	✓	✓		A.T.	POOR
28	1920	26	$\dot{T}$			MODERATE			N.	✓				C.N.	GOOD
	1923	29	$\dot{T}\dot{T}$			MODERATE		✓	N.		✓				GOOD
	1-13-26	32	$\dot{T}\dot{T}\dot{T}$	210	SOLID	SEVERE	✓	✓	R.T. M.D.V.		S.B.				GOOD
29	5-3-26	29	$\dot{T}$	240	SOLID	SEVERE			B.V		T			A.T.	FAIR
30	1917	22	$\dot{T}$			O			N.	✓					POOR
	1921	26	$\dot{T}\dot{T}$			O			N.	✓					POOR
	1-5-27	32	$\dot{T}\dot{T}\dot{T}$	180	L.T.	MODERATE			N.	✓				A.T.	GOOD
XV	1-30-24	31	$\dot{T}$	150	L.T.	MODERATE			H.F.		✓			A.T.	FAIR
31	9-25-25	33	$\dot{T}\dot{T}$	134	S.P.T.	MILD		✓	N.	✓					GOOD
	3-18-27	35	$\dot{T}\dot{T}\dot{T}$	120	V.S.P.T.	O			N.	✓					GOOD
32	10- -25	23	$\dot{T}$			SEVERE			F		✓			A.T.	GOOD
	4-24-27	25	$\dot{T}\dot{T}$	140	T.	MODERATE		✓	M.D.M.F.	✓					GOOD
33	8-6-27	28	$\dot{T}$	200	L.T.	SEVERE			M.E		✓			A.T.	FAIR
XVI 34	7-12-27	32	$\dot{T}$	108	S.T.	MILD			M.F.	✓				L.K.R.	GOOD
35			$\dot{T}$-V			O			N.	4	1				GOOD
	11-14-27	42	VI	160	S.T.	MODERATE			N.	✓				A.T.	GOOD
36			$\dot{T}$-V			MODERATE			H.F. N	4	1			C.N.	FAIR
			VI-XI			MODERATE		✓	N.		6				FAIR
	8-27-27	38	XII	170	SOLID	SEVERE		✓	M.E.		S.B.	✓			FAIR
37	8-10-27	18	$\dot{T}$	190	SOLID	SEVERE			A.C.S.	✓				A.T.	FAIR
38	5-26-22	30	$\dot{T}$	160	L.T.	SEVERE			R.T L.F.		✓			A.T.	GOOD
	4-18-26	34	$\dot{T}\dot{T}$	124	O	O			N.	✓					GOOD
39			$\dot{T}$-III			O			N.	3					FAIR
	3-16-27	36	IV	180	SOLID	SEVERE	✓		R.T. N.		S.B.			A.T.	FAIR
			$\dot{T}$-VI			MODERATE			N						R

20	12-8-25	36	II	240	L.T.	SEVERE		✓	V.G.S.		✓					GOOD
XIII 21	8-22-24	35	I	150	S.T.	MODERATE			M.E		T. S.B.				A.T.	GOOD
	12-25-24	25	I	160	L.T.	SEVERE			B.V.C.S.		✓				C.N.	GOOD
XIV	7-22-25	26	II	200	L.T.	SEVERE		✓	M.D.E.		✓					GOOD
22	10-14-26	27	III	170	L.T.	MODERATE		✓	N.		✓					GOOD
	3-11-27	28	IV	150	S.T.	MILD		✓	T.A.		✓					GOOD
			I			0			N.	✓						GOOD
23			II			0			N.	✓						GOOD
	7-15-25	28	III	220	SOLID	SEVERE			B.V.	✓					A.T.	GOOD
24	7-26-25	28	I	150	S.T.	MILD			L.F.	✓					A.T.	GOOD
25	9-15-23	21	I	140	S.T.	MILD			N.		S.B.		✓		A.T.	GOOD
	2-4-25	23	II	134	0	0			D.C. Misc.		✓					GOOD
	6-13-26	24	III	120	0	0			N.	✓						GOOD
26	12-25-25	21	I	140	S.T.	MODERATE			A.C.S.		S.B.				C.N.	GOOD
	9-27-26	22	II	140		SEVERE		✓	M.D.E		S.B.	✓				GOOD
27	11-21-25	23	I	180	SOLID	SEVERE	✓		A.C.S.	T. ✓	✓	✓			A.T.	POOR
28	1920	26	I			MODERATE			N.	✓					C.N.	GOOD
	1923	29	II			MODERATE		✓	N.		✓					GOOD
	1-13-26	32	III	210	SOLID	SEVERE	✓	✓	R.T. M.D.V.		S.B.					GOOD
29	5-3-26	29	I	240	SOLID	SEVERE			B.V		T				A.T.	FAIR
30	1917	22	I			0			N.	✓						POOR
	1921	26	II			0			N.	✓						POOR
	1-5-27	32	III	180	L.T.	MODERATE			N.	✓					A.T.	GOOD
XV	1-30-24	31	I	150	L.T.	MODERATE			H.F.		✓				A.T.	FAIR
31	9-25-25	33	II	134	S.P.T.	MILD		✓	N.	✓						GOOD
	3-18-27	35	III	120	V.S.P.T.	0			N.	✓						GOOD
32	10- -25	23	I			SEVERE			F		✓				A.T.	GOOD
	4-24-27	25	II	140	T.	MODERATE		✓	M.D.M.F.	✓						GOOD
33	8-6-27	28	I	200	L.T.	SEVERE			M.E		✓				A.T.	FAIR
XVI 34	7-12-27	32	I	108	S.T.	MILD			M.F.	✓					L.K.R.	GOOD
35			I-V			0			N.	4	1					GOOD
	11-14-27	42	VI	160	S.T.	MODERATE			N.	✓					A.T.	GOOD
36			I-V			MODERATE			H.F. N	4	1				C.N.	FAIR
			VI-XI			MODERATE		✓	N.		6					FAIR
	8-27-27	38	XII	170	SOLID	SEVERE		✓	M.E.		S.B.	✓				FAIR
37	8-10-27	18	I	180	SOLID	SEVERE				✓						

36			VI-XI			MODERATE		✓	N.		6					FAIR
	8-27-27	38	XII	170	SOLID	SEVERE		✓	M.E.		S.B.	✓				FAIR
37	8-10-27	18	I	190	SOLID	SEVERE			A.C.S.	✓					A.T.	FAIR
38	5-26-22	30	I	160	L.T.	SEVERE			R.T L.F.		✓				A.T.	GOOD
	4-18-26	34	II	124	O	O			N.	✓						GOOD
			I-III			O			N.	3						FAIR
39	3-16-27	36	IV	180	SOLID	SEVERE	✓		R.T. N.		S.B.				A.T.	FAIR
40			I-VI			MODERATE			N.	5	1				C.N.	FAIR
	11-21-21	35	VII	140	L.T.	SEVERE		✓	N.		S.B.	✓				FAIR
41	3-24-27	35	I	180	L.T	MODERATE	✓		B.L.F	✓					A.T.	GOOD
42	7-2-24	29	I	140	S.T.	MILD			B.M.E.		S.B.				A.T.	GOOD
			I-III			O			N	3						
43	11-22-21	35	IV	140	S.T.	MODERATE			B.M.D.V.		✓				A.T.	FAIR
			V			O			N.	✓						
XVII 44	8-16-22	29	I	148	S.T.	MODERATE			A.C.S.	✓					A.T.	GOOD
	11-8-23	30	II	120	O	O			P.C.S	✓						GOOD
XVIII 45	1-31-26	37	I	130	S.T.	MILD			A.C.S	✓					A.T.	GOOD
46	12- -17	23	I	140	T.	MODERATE			L.F.	✓					A.T.	GOOD
47	1912	20	I			SEVERE	✓		H.F.		✓					
	1918	26	II			MILD		✓	A.C.S.	✓					A.T.	GOOD
	1-10-25	33	III	120	O	O			A.C.S.	✓						GOOD
48	10-26-25	19	I	150	L.T.	SEVERE	✓		N.		✓				A.T.	FAIR
XIX 49	1917	27	I			MODERATE			H.F.	✓					C.N.	FAIR
	1919	29	II						L.F	✓						
	3-21-26	36	III	130	S.P.T.	MODERATE		✓	N.	✓						GOOD
50	1912	24	I			O			F	✓						POOR
	10-24-27	39	II	270	L.T.	MILD			N		✓				C.N.	GOOD
XX 51	7-25-19	34	I	145	S.T.	MODERATE			L.F.	✓					A.T.	GOOD
XXI			I-III			O			N. - B.E	2	1					FAIR
	7-9-20	30	IV			O			N.	✓						GOOD
52	4-11-23	33	V	138	S.T.	MILD			N.	✓					A.T.	GOOD
53	1912	22	I			O			N.	✓						
	2-10-19	28	II	148	S.T.	MODERATE			N.		✓				A.T.	GOOD
54			I-IV			O			N.	4						
	5-3-19	40	V	160	S.T.	MODERATE			N.		✓				A.T.	GOOD
55			I-IV			O			N.	4						
	7-18-18	43	V	160	S T.	MODERATE			N.	✓					A.T.	GOOD
XXII 56	7-2-26	28	I	160	O	MILD			L.F.	✓					L.K.R.	GOOD

CASE	P.	A.T.	G.N.	R.T.	C.	BABIES		M. D.	A.T. BABIES		C.N. BABIES		AGE	PRIM	MULT		ANOMALIES	FIBROIDS
						L.	D.		L.	D.	L.	D.						
1	1	✓				1			✓				27	✓		I		✓
2	16		✓	✓		6	10				6	10			✓			
3	3	✓				2	1	✓	✓				20	✓		II		
4	3	✓		✓		3			✓				28	✓		III		
5	3	✓			✓	3			✓				25	✓		IV		
6	1	✓			✓		1			✓			20	✓				
7	1	✓					1			✓			30	✓				
8	3		✓	✓		1	2				1	2		✓		V	2	
9	1	✓				1			✓				30	✓		VI		
10	1	✓				1			✓				28	✓				
11	2		✓	✓		1	1				1	1		✓				
12	1	✓			✓	1			✓				21	✓		VII		
13	6	✓				5	1			✓			35		✓			
14	2	✓				2			✓				36		✓	VIII		
15	1	✓				1			✓				31	✓				✓
16	3	✓				2	1			✓			30	✓		IX		
17	2		✓	✓			2					2		✓		X		
18	2	✓				2			✓				26		✓			
19	2	✓		✓		2			✓				27	✓		XI		
20	2		✓	✓			2					2		✓		XII		
21	1	✓					1 T			✓ T			35	✓		XIII	2	✓
22	4		✓	✓			4					4		✓		XIV		
23	3	✓				3			✓				29		✓			
24	1	✓				1			✓				28	✓				
25	3	✓				1	2			✓			21	✓				
26	2		✓	✓			2	✓				2		✓				
27	1	✓			✓	1	1 T	✓	✓ T	✓			23	✓				
28	3		✓	✓	✓	1	2				1	2		✓			1	
29	1	✓					2 T			✓ T			29	✓				
30	3	✓				3			✓				32		✓			
31	3	✓		✓		2	1			✓			31	✓		XV		
32	2	✓		✓		1	1			✓			23	✓				
33	1	✓					1			✓			28	✓	•			
34	1	✓				1			✓				32	✓		XVI		
35	6	✓				5	1		✓				42		✓			
36	12		✓	✓		4	8	✓			4	8			✓			
37	1	✓				1			✓				18	✓				
38	2	✓				1	1			✓			30	✓				
39	4	✓			✓	3	1			✓			36		✓			
40	7		✓	✓		5	2	✓			5	2			✓			
41	1	✓			✓	1			✓				35	✓				
42	1	✓					1			✓			29	✓			1	
43	5	✓				4	1			✓			35		✓			
44	2	✓				2			✓				29	✓		XVII		✓
45	1	✓				1			✓				37	✓		XVIII		✓
46	1	✓				1			✓				23	✓				
47	3	✓		✓	✓	2	1			✓			23	✓			1	
48	1	✓			✓		1			✓			19	✓				
49	3		✓	✓		3					3			✓		XIX		
50	2		✓			1	1				1	1			✓			
51	1	✓				1			✓				34	✓		XX		
52	5	✓				4	1		✓				33		✓	XXI		
53	2	✓				1	1			✓			28		✓			
54	5	✓				4	1			✓			40		✓		1	
55	5	✓				5			✓				43		✓			
56	1	✓				1			✓				28	✓		XXII		
TOTAL	156	44	12		9	98	61	5	26	21	22	36		40	16		8	5

TERMS USED IN TABULATION

A.C.S. Abdominal Caesarean Section
B. Voorhees Bag Inserted
M.E. Manual Extraction
H.F. High Forceps Delivery
L.F. Low Forceps Delivery
M.F. Mid Forceps Delivery
M.D. Manual Dilatation
N. Normal Delivery
P.C.S. Porro Caesarean Section
R.T. Rectal Tube
T.A. Therapeutic Abortion
V. Version, Internal Podalic
V.C.S. Vaginal Caesarean Section
L.K.R. Low Reserve Kidney
A.T. Acute Toxemia
C.N. Chronic Nephritics
T. Twins
P. Para
M. } Maternal Deaths
D. }
L. Living
D. Dead

A STUDY OF THE BLOOD MONOCYTES IN CHILDREN WITH TUBERCULOSIS*

BY PHILIP M. ROGERS, M.D.†

"He who would learn let him seek fact."

INTRODUCTION

THE work done by Sabin and coworkers[4], on the primary role of the monocyte in tuberculosis in rabbits, has been the stimulus for much investigation along this line in human beings. Most of this work so far has been done on adults, and very little of it has, as yet, been published. However, up to date, none of this work has been done on infants and children. Consequently, the following work was undertaken to see just how much correlation existed between the findings in rabbits and those in children. It was thought that in children the findings should be more clear cut than in adults because the tuberculous processes would be in the pure active state uncomplicated by old healed lesions. For this purpose a group of children having positive tuberculin tests were studied and were controlled by a group of children having negative tuberculin tests. The cases were obtained in the contagious and non-contagious wards, and the out patient department of the New Haven Hospital.

REVIEW OF THE LITERATURE

So little is to be found in the literature on the subject of blood monocytes that the work of Sabin and her co-workers has been practically the only guide for this work. By means of the "supra-vital technique," Sabin[1] differentiated and described the various leucocytes found in human blood. She divides them into three general groups; the myeloid, the monocytic, and the lymphocytic cells. The first and last of these groups have been clearly differentiated heretofore, but the monocytic cells have not. Formerly they have been called "The large mononuclear and transitional cells of Ehrlich" or the "Endotheliocytes of Mallory." Sabin has shown[5] that they are one and the same cell, and that they are not derived from endothelium, but from the common stem cell of all the other white blood cells, namely, the reticular cell. It is primarily the cells of the monocytic series which she believes[4] are affected in tuberculosis, while those of the lymphocytic series are, contrary to general opinion, less affected.

The earliest cells of the monocytic series to appear in the blood stream are cells which vary in size from 10-15μ. They have a clear cytoplasm and a large eccentric nucleus which is slightly indented on one side. The distinguishing feature of the cell is the so called rosette formation, which consists of certain fine bodies (granules) taking a salmon tint in vital neutral red, which are arranged about the centrosphere just opposite the "hof" or indentation in the nucleus. Other coarser bodies (vacuoles) also staining with neutral red are usually present in variable numbers in the cytoplasm beyond this ring of fine bodies. Mitochondria are practically always present beyond these vacuoles. They stain a deep blue with Janus green, a dye sometimes used in conjunction with neutral red, but do not stain with neutral red. In the youngest cell the rosette consists of only a single ring of neutral red granules; in older cells the ring is made up of many more granules. They are usually constant in size and color in a given specimen of blood. When in motion, the cell is stretched out and tends to advance with an irregular lateral movement. Cell division may occur in the blood stream and is accomplished amitotically, the nucleus dividing before the centrosphere. The larger bodies (vacuoles) staining with neutral red, are considered as evidence of phagocytic ability on the part of the cell, and their number and size depends on the activity of the cell. The immature monocyte lacks this activity, but develops it on maturing. Phagocytized particles are placed at the periphery of the cell.

Sabin and coworkers[4] have shown that in tuberculosis in rabbits the monocytes of both the tissues and blood are changed morphologically. They have demonstrated that the monocyte is able to ingest tubercle bacilli in either the tissues or blood, but they do not believe that it is able to digest them. Either the presence of the bacilli within the monocyte, or possibly substances in the blood stream produced by the bacilli which act on the monocyte, affect it in a characteristic way. The cell is apparently injured, for it becomes non motile. Coincidently with this, there is an increase in the stainable vacuoles of the peripheral zone of the rosette. Such cells they have designated as "modified monocytes". The next effect of the tubercle bacillus on the monocyte is the production of the "epithelioid cell". This is brought about first by the suppression of the vacuoles normally present in the periphery of the cell, and second, by an enormous multiplication of the fine particles (granules) of the rosette. These granules are much finer than in the unstimulated monocyte. The rosette thus becomes the essential characteristic of the epithelioid cell. As the epithelioid cell becomes more affected by the tubercle bacillus, the rosette becomes larger, and the bodies which form it, smaller. The peri-

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pheral zone may be entirely filled by it, but usually remains clear. Further stimulation of the epithelioid cell does one of two things; either the cell begins to undergo fatty degeneration, or the nucleus divides and redivides without cell division, forming a giant cell of the Langhans type. In the former instance, highly refractile fat droplets appear in the peripheral zone, and gradually increase in number until the entire morphology of the cell is obscured. Sabin and coworkers have observed the formation of the giant cell in the tissues, but do not report it in the blood.

In their work they were able to arrive at certain definite conclusions regarding the correlation between the blood picture and the anatomical picture in their animals. They found that there was abundant formation of monocytes in the tissues in tuberculosis and that this was accompanied by an increase in the blood monocytes. This was especially marked in animals of low resistance with extensive tuberculous lesions. At the same time the number of lymphocytes in the blood stream was about one half to one third the number of the monocytes. Modified monocytes and epithelioid cells frequently made up about half the number of monocytes in a differential count under these conditions. In animals with high resistance, on the other hand, they found that there was a rise in the blood monocytes shortly after infection took place, but that they never became more numerous than the lymphocytes. Following the rise in monocytes there was a period of leucopenia, after which there was a steady increase in the lymphocytes. At autopsy, such animals showed very slight amounts of tuberculous infection, most of which was healed or healing. They found that the normal ratio of monocytes to lymphocytes in rabbits was about 1:3.0 and they believe that a reversal of this ratio is evidence of a distinctly unfavorable prognosis for the animal. On the other hand, when the normal ratio is present, or accentuated, they think that the prognosis for the animal is very good. In other words, a very high ratio between the monocytes and lymphocytes of the blood is accompanied by a very low resistance on the part of the animal, and vice versa.

METHODS USED

The supra-vital method of staining cells, described by Sabin[1] was used. Essential points in the technique are described. Absolutely clean glass-ware is of prime importance in making successful stained preparations. All glass-ware was boiled in soapy water, rinsed, and then placed in concentrated sulphuric acid to which potassium dichromate crystals were added. After three or four days it was removed, washed in running water two or three hours, rinsed in distilled water, and then stored in 80 per cent. alcohol until needed.

Great care must be used in the preparation of alcohol for staining. The ordinary commercial absolute alcohol was found to contain traces of acid sufficient to spoil the dye, which is a sensitive indicator. Commercial absolute alcohol was obtained and was redistilled three times over calcium oxide and once with sodium in a glass distilling apparatus. All cork junctions were covered with tin foil to prevent absorption of tannic acid, and the air vent was protected from moisture by a soda-lime tube. The alcohol was stored in tight fitting glass-stoppered bottles.

The stains used were neutral red, a Grübler product, Janis green, a National Aniline Chemical product, both obtained through Arthur H. Thomas Co., of Philadelphia, and ordinary Wright's stain. Stock solutions of saturated neutral red and janus green were prepared with absolute alcohol and dilutions were made from these. Neutral red was made up by adding 5. drops of the saturated stain to 5. c.c. of absolute alcohol. To study the mitochondria of the cells, one or two drops of the saturated janus green were added to a similar dilution of neutral red. These dilute stains were made up fresh each time it became necessary to stain a supply of slides. The concentrated dyes and the stained slides could be kept without deterioration.

The slides to be stained were removed from the 80 per cent. alcohol, in which they were stored, and were carefully dried and flamed. When cool they were flooded with neutral red or neutral red and janus green, as desired, care being taken not to let the dye touch the fingers. They were then drained and dried in an upright position and then stored in a dust proof box until needed.

In the study of the blood, supra-vital preparations, with either the neutral red or the neutral red-janus green mixture, and fixed smears, stained with Wright's stain were made, as well as total counts of the white cells. Differential counts were made of these preparations and were compared with one another. It was found that the supra-vital counts and the fixed smears checked within the reasonable limit of 10 per cent., the error usually being a lower polymorph count in the fixed preparation. However, when the number of injured and disintegrated cells were added to the polymorphs of the fixed smear, this checked much more closely with the supra-vital count. The blood for all preparations was obtained at the same time. A free flow of blood was insured by setting the blood lancet for a deep puncture. The first drop was discarded and the next was picked up with a clean dry cover slip and quickly inverted on the stained slide. The cover slip was then rimmed with a high melting point vaseline (salvoline) to prevent evaporation and the preparation placed on a warm stage microscope. The supra-vital preparations were all counted about 15.-20. minutes after the blood was drawn. It was found that the cells did not take up the dye fully before this time. A warm stage microscope is essential for making accu-

TABLE 1

Table #1. Supra-vital Counts on Children with negative Tuberculin Tests

Group #1. Children under 24 hours old.

Case	Date	Time	Age	Total Wbc	PMN	PMB	PUB	Myel	Lym	Mono	Epith	Remarks
1. M	4/14/26	9:AM	4 hrs	17,800	75	1	1	1	20	2	0	Mother well
2. M	4/16/26	"	11 "	16,400	82	0	1	0	16	2	0	" "
3. S	1/29/26	3:PM	12 "	13,600	79	2	0	0	11	8	0	" Tubercular
Average				15,900	78.7	1.0	0.7	0.3	15.3	4.0	0	M-L Ratio 1:3.8

Group #2. Children under one year

4 R.	11/ 3/26	9:AM	2 Mos	11,900	58	0	0	6	34	2	0	Spina Bifida
5 C.K.	12/ 1/26	"	4 "	7,500	29	1	0	16	51	3	0	Malnutrition
6 W.M.	5/15/26	"	6 "	12,000	34	6	2	0	46	12	0	Acute Upper Respiratory infection
7 R.S.	12/ 1/26	"	6 "	11,900	53	1	0	15	24	5	0	Otitis Media
8 B.D.	3/11/27	2:PM	6 "	11,200	36	0	0	4	59	3	0	Vascular Naevus
9 E.F.	11/30/26	"	9 "	7,500	43	0	0	9	45	3	0	Diarrhoea
10 B.B.	3/17/27	"	11 "	13,000	26	3	0	1	64	6	0	Milk Sensitive
11 W.J.	4/14/26	10:AM	11"	6,500	21	0	0	0	77	2	0	Tetany, Otitis Media
12 T.	3/14/27	"	11 "	14,600	26	1	0	4	63	6	0	Otitis Media
13 M.Z.	4/ 8/28	3:PM	12 "	10,900	34	2	1	0	60	3	0	Cleft Palate
Average				10,600	36	1.4	0.3	5.5	52.3	4.5	0	M-L Ratio 1:11.6

rate counts because the cells rounds up and lose their ameboid motion when cold.

RESULTS

Practically all of the results obtained in the first year had to be discarded because the alcohol used was of improper P.. H. Difficulty was also encountered in learning the differential technique. Unfortunately, normal children could not be obtained to use as control cases. Therefore, control counts had to be made on children who were patients in the hospital. They were considered as controls insofar as they had negative intradermal tuberculin tests. Nineteen

Group #3. Children over one year

14. M.D.	3/11/27	2:PM	21 Mos.	7,300	46	2	0	3	43	6	0	Tetany
15. D.R.	12/7/26	10:AM	2½ Yrs.	11,000	40	3	0	3	54	0	0	Chronic Nephritis
16. C.A.	3/14/27	2:PM	6 "	19,300	37	8	0	0	52	3	0	Acute Rheumatic Heart
17. K.C.	3/19/27	9:AM	7 "	8,600	64	1	0	0	22	13	0	" " Fever
18. V.M.	3/11/27	10:AM	9⅔ "	10,500	72	2	0	1	19	6	0	" " "
19. L.T.	3/11/27	"	11 "	17,200	62	0	1	1	26	10	0	" " "
			Average	12,300	53.5	2.7	0.01	1.3	36.0	6.3	0	M-L Ratio 1:5.7

Children with negative Tuberculin Tests Showing epithelioid cells

20. A.H.	12/8/26	10:AM	20 Mos.	12,600	38	3	0	3	44	12	3	Mother died of Tb.
21. W.T.	12/9/26	3:PM	12 Mos.	5,600	28	4	0	8	52	8	3	Exposed
22. E.A.	12/19/26	9:AM	12 Mos.	13,200	41	2	0	2	41	14	2	"

such children were used, and the resulting supra-vital counts are shown in table No. 1. The children were divided into three age groups; group No. 1, under twenty-four hours; group No. 2, under one year; group No. 3 over one year. This grouping was made, because of the well known fact that the total white count, which is high at birth, diminishes throughout childhood until the adult figure is reached at about 10 years. The differential count also changes in this period, the lymphocytes being high and the polymorphs low after the first twenty-four hours. They become equal in number about the fifth or sixth year, and reach the adult ratio at about ten years of age.

In the present work the various types of cells present were averaged for each age group, mainly for the purpose of seeing approximately what the ratio of the monocytes to the lymphocytes was at different periods of childhood. From this it may be seen that the ratio in the group under twenty-four hours was 1:3.8 in group No. 2, was 1:11.6 and in group No. 3, it was 1:5.7. This latter figure is less than the ratio 1:3.46 as obtained by Sabin and coworkers from counts made on six normal adults. No other figures could be found in the literature on counts made on normal children of corresponding age periods. It should be noted that in none of these nineteen cases having negative tuberculin tests were modified monocytes or epithelioid cells found.

At the end of table No. 1 will be found a group of three children (cases 20, 21, and 22) who also had negative tuberculin tests, but in whose blood modified monocytes or epithelioid cells were seen. All three of these children were under observation in the tuberculosis division of the out-patient department. All of them had given a history of exposure to tuberculosis, but in each case the intradermal tuberculin test was negative. In each case the ratio of the monocytes to the lymphocytes was very low, a fact which in the light of Sabin's work points to the presence of a high degree of resistance to an acquired tuberculous infection. It is extremely interesting that the tuberculin test could be negative in very early tuberculous infection, and still more interesting that the supra-vital count should show the presence of monocytes which have reacted in a manner characteristic of monocytes stimulated by tuberculosis. If more cases such as these could be worked on, it is possible that the supra-vital blood count might prove of value in the diagnosis of the earliest cases of tuberculosis!

Tables No. 2, No. 3, No. 4, and No. 5 show the results of supra-vital counts made on 19 children having positive intra-dermal tuberculin tests. These children have been divided into two groups according to whether the monocyte-lymphocyte ratio was high or low. High ratios varied from 1:1.1 to 3.6:1, while the low ratios varied from 1:29 down to 1:13.0. The majority of the cases fell in the last group with low ratios. It should be borne in mind that, in most of these cases it was possible to get only one or two counts and that there is considerable error in drawing conclusions on insufficient data.

The first group (See table No. 2) is composed

of four cases, all of which had high monocyte-lymphocyte ratios.

CASE No. 23. E. J. Age 4 years (See table No. 2) admitted 11/12/26 was operated on for intestinal obstruction. Extensive tuberculous peritonitis was found. Tubercle bacilli were isolated from tissue removal for biopsy.

state of semi coma. She was put in this group because of the high monocyte lymphocyte ratio. The strongly positive tuberculin test, together with the high monocyte-lymphocyte ratio and the existence of exensive lung pathology certainly point to the existence of an active tuberculous lesion in spite of the lack of more definite proof. When she left the hospital two months after admission her lungs were

TABLE 2

Table #2. Tuberculin Positive Children having High M-L. Ratios

Case	Date	Time	Age	Total Wbc	PMN	PME	PMB	Myel	Lym	Mono	Ep
23	11/24/26	9:AM	4 yr.	12,600	73	0	1	0	13	10	2
	11/27/26	"		12,700	66	0	0	1	17	16	6
24	12/21/26	2:PM	4 "	15,300	71	0	0	3	14	12	0
25	11/17/26	10:AM	6 "	19,000	86	0	0	0	3	11	1
	11/18/26	3:PM		11,000	86	0	0	0	4	10	5
26	12/17/26	2:PM	8 "	22,700	75	0	1	3	8	13	1

11/24/26 Ratio of monocytes to lymphocytes 1:1.3
11/27/26 Ratio of monocytes to lymphocytes 1:1.0
Epithelioid cells were found on both counts. If curves were drawn of the monocytes and lymphocytes in this child, they would converge. The monocytes were increasing faster than the lymphocytes.

The high ratios which existed here, together with the extensive tuberculous lesions found at operation form a very significant combination; one which Sabin[4] pointed out was present in all her animals which showed low resistance to tuberculosis.

CASE No. 24. B. M. Age 4 yrs. Admitted 12/9/26 was operated upon for appendicitis. Generalized peritonitis was found. On 12/10/26 tubercle bacilli were isolated from material taken for biopsy; 12/21/26 total Wbc. 12,700 M.-L (Monocyte-Lymphocyte) ratio 1:1.1. No epithelioid cells or modified monocytes were seen at this time, but the fact that they were not always present in other cases, appearing one time and not the next, does not make this of great moment. The patient died 12/26/26. Autopsy showed generalized tuberculosis involving lungs, pleura, appendix and peritoneum. Here again, a high monocyte-lymphocyte ratio is associated with a very active tuberculous infection as shown by biopsy and autopsy.

CASE No. 25. D. M. Age 6 years. Admitted 11/10/26. This child had tuberculous meningitis. Tubercle bacilli were isolated from the cerebro-spinal fluid.

11/17/26 Total Wbc. 19,000 M-L ratio = 3.6:1
11/18/26 Total Wbc. 11,000 M-L ratio = 2.5:1

Epitheloid cells were seen in both preparations. The patient died six hours after the last count. At autopsy very extensive microscopic tubercle formation was found along the vessels on the base and sides of the brain, caseation of the hilic lymph nodes and chronic and acute proliferative and exudative pulmonary tuberculosis. Again the high monocyte-lymphocyte ratio existed with extensive active tuberculosis as proved by anatomical findings!

CASE No. 26. E. L. Age 8 years. Admitted 12/13/26. This child had lobar pneumonia and the only evidence pointing towards tuberculosis was a strongly positive tuberculin test. Tubercle bacilli were never recovered from the sputum.

12/17/26 Wbs. 22,700 M-L ratio 1.6:1

Epithelioid cells were seen. The child was in a nearly clear, but she was running a daily afternoon temperature.

This completes group No. 1 of children having positive intradermal tuberculin tests and a high monocyte-lymphocyte ratio. The most striking feature observed is that in three of these cases, the high M-L. ratio existed side by side with low clinical resistance to tuberculosis, and extensive active tuberculous lesions as shown anatomically. This is exactly what Sabin and coworkers[4] found in certain of their experimental animals.

The second group is composed of 15 cases having positive tuberculin tests and relatively low monocyte-lymphocyte ratios.

CASE No. 27. (See Table No. 3) C. M. Age 7 months. Admitted 10/21/26. He had pulmonary tuberculosis. Tubercle bacilli were found in his gastric contents. His admission weight was 6400 gms. The blood picture, weight curve, and the relation between the monocytes and lymphocytes may best be followed in chart No. 1. Throughout his stay in the hospital he received ultraviolet light therapy. Between the second and third counts on November 17, 18 and 19 he received three intraperitoneal transfusions of 120 c.c. of blood; and between the 5th and 6th counts, on November 30 and December 1 and 2 he received 100 c.c. of blood intraperitoneally and again on February 5. In the early part of February the child had an acute upper respiratory infection, and bilateral otitis media. Both ear drums were incised.

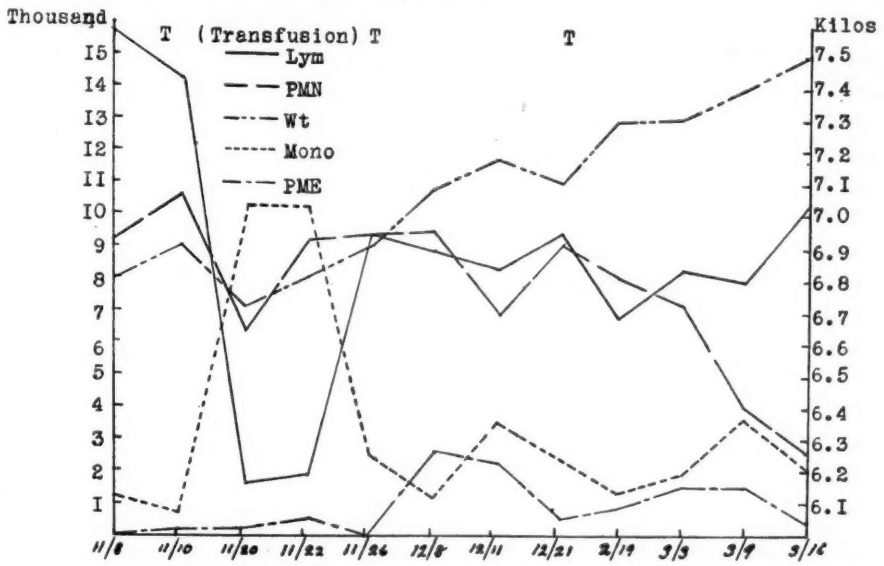
In following the blood picture (Chart No. 1) the most striking feature seems to be the sudden rise in the monocytes and equally sudden fall in the lymphocytes which occurred sometime between November 10 and 20, and which was maintained until the 22d. In checking this over with the protocol given above, it will be noticed that transfusions were given on each of the three preceding days. There was a much less marked fall of the neutrophilic curve at the same time. The reaction to the transfusion itself may account for some of this, but it does not seem possible that it can account for all of it.

Sabin found similar abrupt changes in the blood picture in some of her animals and found it to be coincident with a marked extension of tuberculous infection, as proved both by X-ray and by anatomical findings. Other transfusions given between the counts made on November 26 and December 8 and early in February do not seem to have caused similar reactions. However, the counts did not follow so closely after the transfusions at these times, and the reaction may have been completed if there was one. It should be noted that after the fall in the monocyte curve was completed December 22, there occurred a marked rise in the eosinophilic curve. This remained high throughout the early half of December and then fell gradually to the normal level. This fact adds considerable weight to the theory that the marked change in the blood picture was due to an extension of the tuberculous process. Gardner[7] found an eosinophilia in guinea pigs following a re-infection or extension of the tuberculous lesions. Clinically, too, the child seems to have been worse during this period, the weight curve especially indicating that he was not doing well. The sudden change back to nearly the original monocyte-lymphocyte ratio between December 22 and 26 would indicate that the tuberculous extension was very quickly checked. Sabin[4] also noticed this quick return of the blood picture in her animals. Throughout the remainder of the experiment the ratio of the monocytes to the lymphocytes remained low except for the slight increases on December 11 and March 9. This indicates, possibly, that the child's general resistance to tuberculous infection is quite high, but that he is subject to occasional brief periods of extension of the lesions which are promptly checked. Another evidence that he is doing fairly well is that there has been a steady though slight gain in weight and a gradual reduction in temperature throughout his stay in the hospital.

Table #3 Case #27 (Low Monocyte Lymphocyte Level)

Date	Time	Total Wbc	PMN	PME	PMB	Myel	Lym	Mono	Epith.
11/ 8/26	9:30 AM	26,000	35	0	0	0	60	5	0
11/10/26	"	24,000	41	1	0	0	55	3	0
11/20/26	"	18,100	34	1	0	0	9	56	25
11/22/26	"	22,000	42	2	0	0	10	46	15
11/26/26	"	23,400	40	0	0	9	40	11	5
12/ 8/26	"	22,900	41	12	0	3	39	5	0
12/11/26	"	22,600	31	10	1	5	37	16	7
12/21/26	"	21,500	42	2	0	2	44	10	1
2/19/27	"	17,200	47	3	0	2	40	8	3
3/ 3/27	11:AM	19,400	37	8	0	2	43	10	2
3/ 9/27	3:PM	17,200	23	9	0	0	46	22	2
3/16/27	"	15,500	17	2	0	1	67	13	2

CHART 1



Please note that to conserve space, the dates have been spaced equal distances apart, but do not correspond to equal time intervals.

It looks as though his chances for recovery are fair.

CASE No. 28 (See table No. 4) V. O. Age 11 months. Admitted 7/26/26. The child had an acute bronchitis and gave a history of exposure to tuberculosis through her mother, who has an active pulmonary lesion. X-ray showed considerable shadow in the hilus region on both sides. Tubercle bacilli were isolated from her gastric contents.

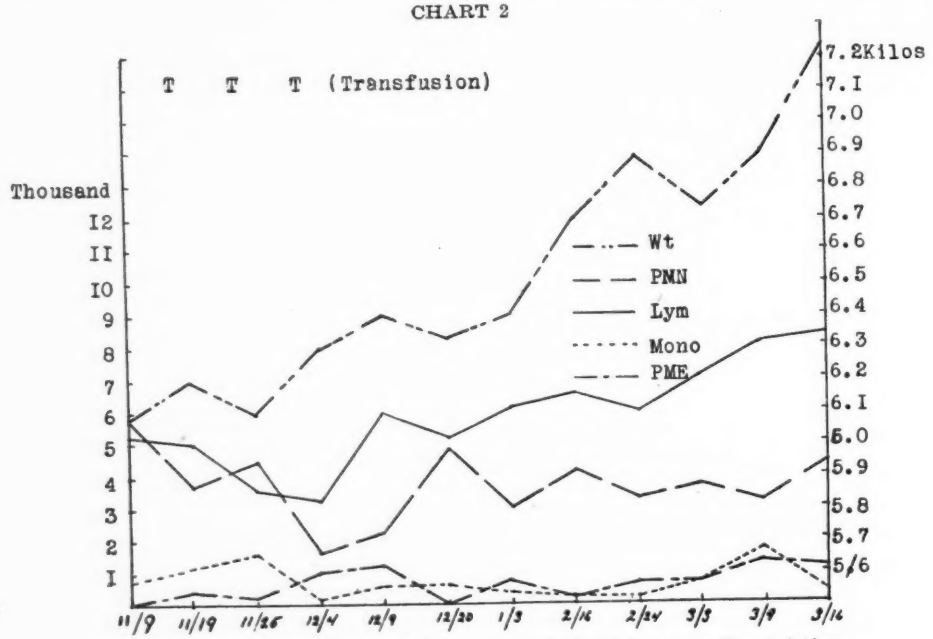
Throughout her stay in the hospital she received ultra-violet light therapy daily. On October 20 and 23 she was given 100 c.c. of blood intraperitoneally. On November 17 she received 120 c.c. of blood, on November 30 and on December 2, 120. c.c. of blood. The relation between the various types of blood cells and the weight may be followed over a long period in chart No. 2.

Table #4 Case 28 (Low Monocyte-Lymphocyte Level)

Date	Time	Total Wbc	PMN	PME	PMB	Myel	Lym	Mono	Epith.
11/ 9/26	2:PM	12,100	49	0	0	0	44	7	0
11/19/26	"	10,600	36	4	0	0	48	12	1
11/25/26	9:AM	10,600	42	2	0	4	36	16	2
12/ 4/26	"	6,300	28	16	0	3	51	2	0
12/ 9/26	"	10,000	21	11	0	4	57	7	3
12/20/26	3:PM	11,200	44	0	0	5	46	5	1
1/ 3/27	10:AM	10,500	29	7	0	1	59	4	0
2/16/27	3:PM	11,000	38	1	0	0	60	1	0
2/24/27	"	10,600	32	6	0	2	58	3	0
3/3/27	2:PM	12,100	29	5	0	2	59	5	2
3/ 9/27	"	15,100	21	9	0	5	54	11	1
3/16/27	"	14,500	31	8	0	1	58	2	0

The point of lowest resistance in this case, as measured by Sabin's standards, seems to have occurred on November 25th, at which time the monocyte-lymphocyte ratio was 1:22. This just preceded the lowest total white count and was followed by a moderate eosinophilia, all of which points to the occurrence of a slight extension of the tuberculous lesion at this time. After December 4 each slight rise in the monocyte count was accompanied or followed by a greater rise in the lymphocytes. These slight rises in the monocyte curve have been interpreted as being caused by slight extensions of the tuberculous

CHART 2



Please note that to conserve space dates were not placed in proper time relation.

As can be seen on comparing charts No. 1 and No. 2, they are roughly similar with the exception of the one period of reversal of the monocyte-lymphocyte ratio in chart No. 1 between

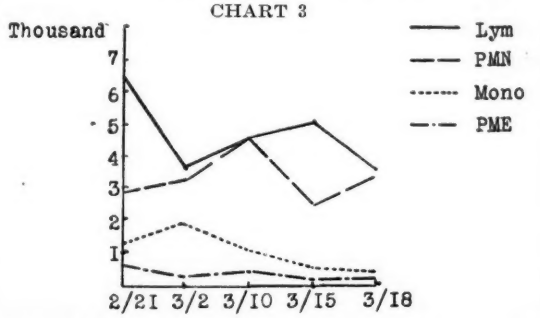
process. The marked reaction of the lymphocytes to these shows an ever increasing resistance on the part of the child. Each rise in the monocyte curve has been followed by a moderate rise in the eosinophilic curve, which was thought to substantiate the idea that slight extension of the lesion was occurring. The clinical picture, as judged by the steady though slight gain in weight and the gradual lowering of the temperature curve shows a steady, slow improvement throughout the child's stay in the hospital. In both of these cases a low monocyte-lymphocyte ratio has accompanied clinical signs, pointing to a reasonably fair amount of resistance to extension of the tuberculous process.

TABLE 5

Table #5. Tuberculin positive Children with low M.L. Ratios

Case	Date	Time	Total Wbc.	PMN	PMS	PMB	Myel	Lymp	Mono	Epith.
29	2/21/27	10:AM	11,500	26	5	0	2	55	12	0
	3/2/27	3:PM	9,200	36	3	0	0	40	21	10
	3/10/27	"	11,200	42	3	0	2	42	11	0
	3/15/27	10:AM	8,800	28	3	0	4	58	7	0
	3/18/27	"	8,000	44	4	0	1	45	6	0
30	3/5/27	2:PM	----	35	4	0	3	52	6	1
31.	12/16/26	9:AM	7,500	16	0	0	4	72	8	2
32.	2/17/27	3:PM	11,500	58	2	0	1	31	8	1
	2/28/27	2:PM	16,500	71	0	0	0	21	8	3
	3/18/27	9:AM	7,400	45	2	0	0	40	13	2
33.	3/16/27	10:AM	11,300	67	2	0	1	23	7	1
34.	3/16/27	"	7,500	52	3	0	0	38	7	0
35.	2/23/27	12:AM	9,400	56	1	0	0	36	7	2
36.	12/13/26	9:AM	9,600	67	3	0	5	20	7	5
37.	12/7/26	"	13,900	57	5	0	5	38	0	0
	12/10/26	"	11,000	63	7	0	2	26	2	1
38.	12/22/27	10:AM	13,900	78	0	0	2	17	3	1
39.	12/21/27	9:AM	9,000	39	12	0	3	41	5	1
40.	3/17/27	10:AM	9,900	58	1	0	2	28	11	3
41.	3/ 4/27	2:PM	10,400	77	2	0	1	12	8	0

CHART 3



CASE No. 29. (See table No. 5.) H. S. Age 18 mos. Admitted 1/27/27. This child was also exposed to a mother who had active pulmonary tuberculosis. She was admitted because of an upper respiratory infection. She was well nourished and did not appear ill. Her tuberculin test was positive. X-ray showed enlargement of the bronchial nodes and some clouding of the parenchyma of both lungs. Organisms were never recovered from the sputum in this case. The blood picture is shown in Chart No. 3.

2/21/27 Total Wbc. 11,500
3/ 2/27 Total Wbc. 9,200 Child transferred from Isolation to non-contagious ward.
3/10/27 Total Wbc. 11,200 Child has acute bronchitis
3/15/27 Total Wbc. 8,800 Child much better
3/18/27 Total Wbc. 8,000 Child improving

Numerous epithelioid cells were seen on 3/2/27, the highest point in the monocyte curve, and the lowest point of the lymphocyte curve, but they were not seen again. The highest monocyte-lymphocyte ratio was 1:1.9 on this date. Following this there seems to have been a marked lowering of this ratio, which Sabin thinks is evidence of increasing resistance to tuberculosis. The slight raising of this ratio on 3/18 may or may not have been due to an extension of the tuberculous lesion as the monocytes did not rise. The general resistance of this child is high as judged by the blood picture and this is borne out by the clinical picture.

CASE No. 30. (See Table No. 5.) M. P. Age 18 mos. Admitted 2/7/27. This child was sent in to the hospital because of slight unexplained afternoon fever and cough of 3 weeks' duration. She was found to have cervical adenitis, otitis media, and an acute upper respiratory infection. The only evidence of tuberculosis was a positive intradermal tuberculin test and the X-ray findings. The latter showed a few calcified cervical nodes and slight fibrosis and beading about both hilus regions. Only one count was made on this child (3/5/27), but one epitheloid cell was seen at this time, indicating the existence of an active tuberculous process. The monocyte-lymphocyte ratio was very low 1:8.7, and this taken with

the fact that her temperature had come down, and that she was gaining in weight, was taken to mean that she had a high resistance to her infection at this time.

CASE No. 31. (See table No. 5.) A. R. Age 18 mos. This child was seen once in the tuberculosis division of the out-patient department. She had been exposed to tuberculosis through her father and had a positive tuberculin test. She is suspected of having an active lesion. 12/16/26 Wbc. 7,500. Two epithelioid cells were seen which confirm this suspicion. However, the M.-L. ratio was very low 1:9.0, so that she may be considered as having a high resistance to the disease.

CASE No. 32. (See table No. 5.) A. S. Age 2½ years. Brother of case No. 29. Also exposed to a tuberculous mother. He was admitted 1/27/27 because of a cough and intermittent daily fever and an upper respiratory infection. He had a positive tuberculin test and showed signs of tracheo-bronchial gland tuberculosis on X-ray examination.

2/17/27 Total Wbc. 11,500 M.-L. ratio 1:4.0
2/28/27 Total Wbc. 16,500 M.-L. ratio 1:2.6
3/18/27 Total Wbc. 7,400 M.-L. ratio 1:3.0

Epithelioid cells were seen in all counts made on this boy. His resistance as shown by the blood picture when first seen was fairly high, but was much lower 11 days later, and three weeks later was rising. One cannot say from one blood count or from three which are widely spaced whether the individual has a high or a low resistance to tuberculous invasion. The blood counts must be made frequently over long periods to make certain of this point. This boy probably would show a fairly high degree of resistance if followed in this way. Clinically he is a well nourished child who is gaining slowly and whose temperature is coming down.

CASE No. 33. (See table No. 5.) A. K. Age 3 yrs. Has been in the hospital about 2 yrs. because of pulmonary tuberculosis, cervical adenitis, and tuberculous osteomyelitis. She has been under helio and ultraviolet therapy most of this time and is now (3/16/27) quite well. The count on this date showed 11,300 Wbc. and an M.-L. ratio of 1:3.2. One modified monocyte was seen. The presence of the modified monocyte indicates that there is still an active focus, while the M.-L. ratio points to a fair degree of resistance to infection at this time.

CASE No. 34. (See table No. 5.) E. L. Age 4 yrs. This girl has been in the hospital on a plaster shell nearly two years because of Potts' disease. X-ray shows some increased density in the hilus regions of the lungs. The child is getting ultraviolet and heliotherapy and seems to be making some improvement clinically. No epithelioid cells or modified monocytes were seen in the one count done (3/16/27) but would probably be seen if more counts could be made. The M.-L. ratio was 1:5.4 which indicates a high degree of resistance. From this standpoint the outlook seems favorable at present.

CASE No. 35. (See table No. 5.) Y. R. Age 5 yrs. This girl has a history of exposure to a tuberculous father. X-ray shows clouding in both hilus regions. Her tuberculin is positive. Tubercle bacilli were never isolated from the sputum. Account was made 2/23/27 the day before she was taken to a sanitarium. She had bronchitis at this time and was very pale and emaciated. Her total count was low for a five year old child (9,400) though not below the lower limits for the age. Two epithelioid cells were seen. The M.-L. ratio was 1:5.1. This indicates a high degree of resistance to tuberculosis, but clinically she shows low resistance. If more counts could have been made in this case, the high resistance indicated cytologically might prove to have been only temporary.

CASE No. 36. W. S. Age 6 yrs. (See table No. 5.) The evidence for tuberculosis in this case was based on the presence of cervical adenitis, positive tuberculin test, and the presence of giant cells in tonsils removed at operation. No tubercle formation was observed in the latter and no tubercle bacilli were isolated from the tonsils. The child was in the hospital only a few weeks.

12/13/26 Wbc. 9,600. Five epithelioid cells were seen. The M.-L. ratio was 1:2.9. While this ratio is not very low compared with the others of this group it cannot be considered with the high ratio group. The boy has less than normal resistance, but seems to be holding his own clinically.

CASE No. 37. W. B. Age 6½ yrs. (See table No. 5.) This boy was exposed to tuberculosis through his mother. He has a positive tuberculin test, and cervical adenitis. Tubercle bacilli were never isolated from the sputum. In the first count, 12/7/26, no monocytes were found, but on 12/12/26, two were seen, one of which was of the modified monocyte type. The monocyte-lymphocyte ratio was very low, 1:13.9 indicating a high degree of resistance at the time of the last count. His stay in the hospital was brief.

CASE No. 38. H. T. Age 7. (See table No. 5.) This girl was seen in the out-patient department and was suspected of having tuberculosis on the basis of X-ray findings of calcified abdominal glands and a positive tuberculin test. She had suggestive lung signs.

12/22/26 Total Wbc. 13,900 M.-L. ratio 1:5.6

One modified monocyte was seen. Both the blood and the X-ray findings point to evidence of tuberculous infection associated with a high degree of resistance at this time.

CASE No. 39. J. L. Age 8 (See table No. 5.) This was a colored boy with a clinical diagnosis of pulmonary tuberculosis. X-rays of the lungs were negative. Tubercle bacilli were never isolated from the sputum. The blood picture 12/2/26 showed a very low monocyte-lymphocyte ratio of 1:8.2. One epithelioid cell was seen. The resistance of the boy at this time was high as judged by the blood picture. Clinically he was not very sick.

CASE No. 40. J. B. Age 9 yrs. (See table No. 5.) Admitted to the hospital because of post-scarlatinal hemorrhagic nephritis. He had a slight afternoon temperature rise, and X-ray showed some slight enlargement of the hilus regions and slight fibrosis and beading of the adjacent parenchyma. He has been in contact with a tuberculous mother. His tuberculin test was positive. Three epithelioid cells were seen in his blood on 3/7/27. The M.-L. ratio was 1:2.5 all of which would indicate that he has an active tuberculous lesion to which his resistance is not very great.

CASE No. 41. S. B. Age 11 yrs. (See table No. 5.) This boy was admitted because of acute rheumatic fever. His tuberculin test was positive. No epithelioid cells or modified monocytes were seen in this count (3/4/27) but the M.-L. ratio 1:1.5 was quite a bit higher than others of this group. This would make it seem that he had a tuberculous lesion. The fact that no modified monocytes or epithelioid cells were seen in this count does not rule out this possibility. In other active cases these cells were only present in occasional counts. If he has tuberculosis, the boy certainly has lowered resistance, but not as low as those seen in group No. 1.

This case completes the second and last group of children having positive tuberculin tests. The

majority of these children had monocyte-lymphocyte ratios above 1:5.1. Corresponding to these low ratios most of the cases showed fairly high clinical resistance. Two of them, followed over long periods, showed considerable clinical improvement throughout their stay in the hospital.

In case No. 27 there was a marked reversal of the monocyte lymphocyte ratio at a time when the patient was not doing very well. This was followed by a moderate eosinophilia. At other times in this case and in the succeeding case when the monocyte lymphocyte ratio became temporarily higher, the period was followed by a slight eosinophilia. Those periods were interpreted as being associated with slight extension of the tuberculous processes.

SUMMARY

1. Nineteen counts were made on a corresponding number of children with negative tuberculin tests. These were grouped into 3 age periods; the first, under 24 hrs. old; the second, under 1 year old; the third between 1 and 11 yrs. old. The average monocyte lymphocyte ratios in the respective age groups were: first 1:3.7; second, 1:11.6; third, 1:5.7. No modified monocytes or epithelioid cells were found in any of these groups.

2. Three counts were made on children with negative tuberculin tests in whom there was reason to suspect the existence of tuberculosis. Modified monocytes or epithelioid cells were found in all three counts.

3. Counts were made on nineteen children with positive tuberculin tests. Four of these children had very high monocyte lymphocyte ratios above 1:1.1. In three of these four the existence of extensive active tuberculosis was found anatomically. The other fifteen children of this group had ratios below 1:1.1 and showed fair degrees of clinical resistance to tuberculosis. Epithelioid cells or modified monocytes were practically always present in the blood stream of these children with positive tuberculins. In one child of the last group (No. 27) there was a brief period in which the monocytes were more numerous than the lymphocytes. This was followed by a moderate eosinophilia. Peaks in the monocyte curves were usually accompanied by depressions in the lymphocyte curves, and were followed by slight eosinophilia.

CONCLUSIONS

1. Modified monocytes or epithelioid cells are almost constantly present in the blood stream of patients having active tuberculosis. They are thought not to be present in the blood in other common diseases or in healthy persons. How far this is true, can only be determined by studying the blood in all other diseases. Sabin has shown them to be present in Malta fever.

2. Monocytes, including modified types, become more numerous in the blood when extensive tuberculous lesions are present.

3. A rise in the monocyte level of the blood is usually accompanied by a fall in the lymphocyte level. At such times extension of tuberculous lesions has been shown.

4. Moderate eosinophilia follows periods in which the monocyte lymphocyte ratio has been raised. This is further evidence that extension of tuberculous processes has occurred.

5. When the monocytes of the blood are more numerous than the lymphocytes there exist widespread tuberculous lesions and the patient is said to have very low resistance.

6. When the monocytes of the blood are very much less numerous than the lymphocytes the patient usually shows high resistance to tuberculosis and the tuberculous lesions are assumed to be slight or healing.

7. Modified monocytes or epithelioid cells may appear in the blood stream in incipient tuberculosis before the intradermal tuberculin test is positive.

8. The work of Sabin and coworkers has a clinical application in the diagnosis and prognosis of tuberculosis in infants and children.

The writer feels that the small number of cases studied and the brief amount of study put on them is insufficient to make these conclusions very accurate. The work should be checked up on a larger series.

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Taken from the paper given before the National Tuberculosis Association in Washington in 1926.

In presenting this thesis, I express my appreciation to Dr. Dunham of the Department of Pediatrics of the Yale School of Medicine, and to Drs. Sabin and Doan of the Rockefeller Institute of New York, for valuable help and suggestions.

THE DETERMINATION OF THE BLOOD SEDIMENTATION TIME WITH CAPILLARY BLOOD*

BY DAVID DAVIS, M.D.†

WHEN whole blood is taken up in an anticoagulant and allowed to stand undisturbed, the corpuscles slowly settle to the bottom, leaving a clear layer of plasma above. In health, the rate of this sedimentation follows a constant and slow curve. With the onset of certain abnormal conditions, the sedimentation velocity becomes accelerated, and per contra, with the return to the normal state, it becomes slow again. For example, in chronic pulmonary tuberculosis[1] [2] an active process is closely paralleled with an increased sedimentation velocity. When this activity ceases and healing controls the spread of infection, it returns to normal.

An increased sedimentation velocity occurs whenever there is an increased destruction of tissue. This takes place in febrile conditions, in inflammatory conditions without fever, in malignancy, in thyrotoxicosis, and in pregnancy after the third month. The sedimentation test thus expresses a change in the general metabolism of the body and, in this respect, it is comparable to fever. It is a sensitive index of the presence or absence of an abnormal state. A slight infection or slight metabolic disturbance usually causes an increased velocity. In the course of an acute infection, such a change may precede the onset of leucocytosis, and, at times, it is manifest in the absence of an increased white cell count. The sedimentation velocity is not infrequently increased in mild and low grade infections, when other clinical signs are absent.

The historical, theoretical, and clinical aspects of this problem have been dealt with extensively in many recent articles. At the present time this test is very popular in Europe, and is receiving more and more attention in America. An excellent review of the subject, with references, will be found in a paper by Boehner and Wassing[3].

CLINICAL VALUE

One of the most important uses of the sedimentation test is in the study of chronic tuberculosis. In incipient pulmonary tuberculosis, when physical signs and fever are absent and the sputum negative, an increased sedimentation velocity may be the only objective indication of activity. Again, in a suspected case, a repeatedly normal sedimentation rate will usually rule out active tuberculosis. Because of its great sensitiveness, the sedimentation velocity is of prime importance in prognosis. In many of the sanatoria in Austria and Germany, this test is used as an index of the course of the disease, and a patient is not discharged until the sedimentation time is normal. Commenting on this, Boehner and Wassing remark: "Here we see the blood sedimentation test playing exactly the same rôle in the course of chronic pulmonary tuberculosis, as the complement-fixation test in the course of lues."

The sedimentation velocity is regarded as important in the differential diagnosis between an ectopic pregnancy and inflammatory disease of the adnexa. In uncomplicated ectopic pregnancy of less than three months' duration, the sedimentation velocity is normal, whereas in pelvic inflammation it is greatly increased.

In certain inflammatory conditions the surgeon waits for nature to wall off the process before interfering. The sedimentation velocity is known to become slowed as this walling off process takes place. Thus, Friedlander[4] considers the test of aid in deciding the time to operate in certain cases of chronic disease of the adnexa and in cecal abscesses.

For the many other uses, still in the problematic stage, the reader is referred to the large literature on this subject.

METHODS

A number of methods for determining the sedimentation velocity are employed. These embody the same general principles. A few cc. of blood are drawn from a vein and mixed with an anticoagulant, usually sodium citrate (2-4 per cent.), in the proportions 1 to 4, 5, or 6 parts of blood. The proportion is easily gauged in a syringe, the citrate being taken up first and the blood drawn after. The blood is then transferred to a test tube, or specially graduated sedimentation tube, thoroughly mixed by shaking, and allowed to stand erect undisturbed. The rate of sedimentation is conveniently measured in terms of millimeters of plasma (or percentage) per unit time, or in terms of the total time required for complete sedimentation. The most popular readings are at the end of 1, 2 and 24 hours. For practical purposes the amount of blood, the dilution ratio with anticoagulant, and the size of the tube used do not appreciably influence the determination.

A few capillary methods, requiring but a few drops of blood from a skin puncture, have been described. These have the disadvantage of requiring in each instance a specially manufactured pipette. The lack of uniformity of these instruments, and the expense that the preparation of a number might incur suggested a sim-

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†For record and address of author see "This Week's Issue," page 775.

pler procedure. In the method to be described the only material needed is some 2 mm. glass tubing and a little collodion. A 2 mm. tube is prepared with a flame, and a small amount of citrate taken up at one end. This is followed by a few drops of blood, and the ends sealed with a drop of collodion. After a vigorous shake, the blood is ready for sedimentation.

TECHNIQUE

A definite technique must be followed. Glass tubing of 2 mm. bore is cut into convenient lengths (15 to 20 cm.) and cleansed by immersing in 5 per cent. nitric acid for 12 to 24 hours. The acid is thoroughly washed off in running water and the tubing finally dried with alcohol and ether. A supply of tubes of 4 to 6 cm. in length, with both ends drawn to capillary size, are prepared with a low bunsen flame (Fig. 1a).

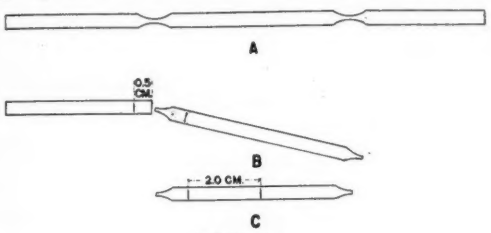

FIGURE 1

Each tube is then graduated as follows: A piece of straight tubing is made into a gauge by marking with a file at a point 0.5 cm. from a free end. Alcohol is taken up to this mark and then transferred by capillary attraction to the tip of a prepared sedimentation tube (Fig. 1b). The point of the meniscus on this tube is marked with a file and a second mark is made 2 cm. above it (Fig. 1c). The tip, up to the first mark, represents a volume equivalent to 0.5 cm. of straight tubing, and when citrate is taken up to the first mark and blood up to the second, a ratio of one to four is obtained. Figure 1b shows the position used in transferring the alcohol from the gauge to the capillary tip to be marked.

The ear or tip of the finger is wiped dry, and an adequate puncture made to insure a few drops of blood. Sodium citrate (3.8 per cent. solution) is taken up to the 0.5 cm. mark of a tube and then the blood, drop by drop, up to the 2.5 cm. mark. The tube should be held horizontally during this procedure, as in a vertical position the blood may slide down the tube and be lost. Both ends are sealed with a drop of collodion applied to the tips. The commercial preparation, "New Skin," is very suitable. The tube is now taken between thumb and forefinger and the blood end held uppermost. This allows the citrate to rise to the top and mix with the blood. Just holding in this position for a few seconds is sufficient to prevent clotting. For a sedimentation reading, however, it is necessary to shake the column of blood vigorously from one end to another, once or twice. The blood is then ready for sedimentation. The exact sedimentation reading is made with the ordinarily celluloid centimeter rule. A satisfactory stand for the tubes can be prepared by punching suitable holes in a candy box cover. Care should be taken to make sure that the tube stands exactly perpendicular.

THE NORMAL SEDIMENTATION TIME

The most popular reading, and perhaps the most practical, is that at the end of a 2 hour period. A complete sedimentation time requiring more than 2 hours is generally regarded as within normal limits; one less than 2 hours, as increased; and when less than one-half hour, very rapid and indicative of considerable activity (infectious or metabolic). Sedimentation in normal individuals is usually complete in about 24 hours. Greisheimer[5], using Cutler's[6] technique, studied the variations of corpuscular sedimentation in healthy young adults. In all of 13 young men the average 2 hour reading (of from 3 to 7, carried over periods of from 5 to 9 weeks) was less than one-half the total reading at the end of 24 hours. The same was true of 10 out of 18 young women. In 3 subjects as much as four-fifths of the total sedimentation (24 hours) was complete in two hours. In every case, however, the complete sedimentation required more than 2 hours. Greisheimer concludes that sedimentation shows some variations from week to week; that this variation is slightly more marked in women; and that the rate is slightly faster in women than in men. She found no appreciable difference in the rates during and between menstrual periods.

CONCLUSION

A simple skin puncture method for determining the sedimentation velocity of blood is presented. This method does not require any special apparatus. A small amount of citrate followed by a few drops of blood are taken up at one end of a prepared 2 mm. tube. The ends are sealed with a drop of collodion and, after a vigorous shake, the blood is ready for sedimentation.

I wish to thank Dr. Ralph C. Larrabee for his kindness and help.

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REPORT OF CONVALESCENT MEASLES SERUM ADMINISTRATION IN CASES EXPOSED TO MEASLES DURING THE COURSE OF SCARLET FEVER AND DIPHTHERIA*

BY CONRAD WESSELHOEFT, M.D., AND FAITH FAIRFIELD GORDON, M.D.†

THE purpose of this report is to add to the cumulation of evidence in support of the value of convalescent measles serum in subduing an outbreak of measles in an institution[1]. Measles is regarded with different degrees of awe according to when and where it breaks out. The average family physician apparently looks upon the disease as an inevitable storm in the course of an individual's development. He regards it as a sudden squall which is quickly over, and which only occasionally brings any real worry or disaster, particularly if the patient is put to bed with the first symptoms. Our experience outside the hospital causes us to subscribe to this view. The public health official, whose prognosis of a disease rests upon the mortality statistics from all available sources, is apt to take a more gloomy view of measles. The third point of view is that of the hospital physician. Here again it varies according to the nature of the hospital. One fact stands out clearly in the statistics, namely, the mortality is very much greater in children under five years of age. However, it is generally conceded that the advent of measles is more undesirable during the course of diseases involving the upper respiratory tract, especially scarlet fever and diphtheria. This report deals with an outbreak of measles in scarlet fever and diphtheria wings of a contagious hospital in the winter months.

We admit that theoretically measles should not be allowed to gain headway in an institution whose staff is trained in the art of isolation in contact and droplet infections. We plead guilty of allowing this to take place in our wards on more than one occasion, in spite of precautionary measures, knowing full well that the same situation develops in other contagious hospitals.

Measles, mumps, and chickenpox gain admission to our scarlet fever and diphtheria wards through exposure previous to admission. Thus a child admitted with diphtheria or scarlet fever may come down with measles a week after admission, and by the time the Koplik spots are detected a large ward is contaminated, or even an entire floor when the hospital is crowded. Inasmuch as we are under contract with certain boards of health to take in their contagious cases, we are in the position of a municipal hospital in that we find ourselves at times forced to admit cases beyond our capacity for most efficient care. This is, of course, always true in laryngeal diphtheria, which is never refused, and to an equal extent in cases of scarlet fever requiring a mastoid operation. All this is said with the idea of conveying the fact that contagious work in private practice is of a much milder variety than that met with in a contagious hospital, the function of which is to receive cases that cannot be adequately cared for at home, either on account of the severity of the form or the complications requiring operative interference. Thus the percentage of severe and complicated cases in contagious hospitals is always greater than in outside practice.

A case which is admitted as measles offers us no insurmountable difficulties in the way of isolation; neither does a case of scarlet fever or diphtheria which we know on admission has been exposed to measles, provided we have a private room available. Of course, a case with a history of such exposure demands special isolation in the scarlet fever or diphtheria wing.

The value of a previous history of measles in connection with isolation and with the arranging of contacts is of more theoretical than practical importance. In all probability true measles confers the same degree of immunity for life as does scarlet fever. But a great many cases of German measles, serum rashes, and food rashes are diagnosed as measles[2]. This accounts for the prevalent notion among the laity that one can have measles several times. Recurrent cases of measles, scarlet fever, and mumps do occur, it is true, but such loss of immunity is so exceptional that those who have actually had these diseases may for practical purposes be regarded as immune contacts.

From the point of view of the family physician, convalescent serum is not a necessary part of the armamentarium in the therapeutics of measles, except under the unusual circumstances (just described) that may occur in the scarlet fever and diphtheria wards of a hospital. The purpose, then, of this report is to furnish proof of its efficacy under such circumstances.

At a time when measles was prevalent in and about Boston, this disease got headway both in the diphtheria and scarlet fever wings of the

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[1] For a concise essay on the subject the reader is referred to: "The use of convalescent serum in the prophylaxis of measles," Weaver, G. H., and Crooks, T. T., Jour. A. M. A., Jan. 19, 1924, 82, p. 204.

[2] One of us (Wesselhoeft) after twelve years of hospital experience with contagious diseases diagnosed a case in his family practice as measles. He became suspicious of his error when no further cases developed, and so informed the mother, who "knew" she had had measles three times. The next year this same boy contracted true measles and gave it to his brother and sister—but not to his mother. Of course, the case was reported both times as measles to the board of health, and helped to swell the statistical errors of the city, county, state, and nation in regard to its prevalence. But such errors can no more be undone than their numbers can be estimated by those who compile statistics from all sources.

hospital. All of the twenty-five non-immune children so exposed and not given serum contracted measles. Of these cases, four were mild, five moderate, sixteen severe, and one patient died. Two of these twenty-five cases were reported as having had measles previously, but inasmuch as they came down with the disease—one moderately and one severely—they were included in this control group of those not having acquired immunity.

Received no convalescent serum	Number exposed	Number escaped	Came down with measles	Mild measles	Moderate measles	Severe measles	Died	Bronchopneumonia	Intubed
SCARLET	21	0	21	3	2	16	1	2	1
DIPHTHERIA	4	0	4	1	3	0	0	0	0
TOTAL	25	0	25	4	5	16	1	2	1
Received 5 cc. convalescent serum									
SCARLET	42	33	9	8	0	1	0	1	1
DIPHTHERIA	9	4	5	4	1	0	0	0	0
TOTAL	51	37	14	12	1	1	0	1	1
TOTAL OF ALL CASES	76	37	39	16	6	17	1	3	2

Percentages are not given because the series is too small for percentage figures to be of real value; and furthermore, such factors as the age and the condition of the patient at the time of administration of the serum cannot be included.

Among fifty-one cases of exposure (with no history of previous measles) to whom convalescent serum was administered, only fourteen developed measles. In other words, thirty-seven of the fifty-one did not develop measles at all. Koplik spots developed in six of these fourteen cases within three days of the administration of the serum. In seven cases measles developed, although the serum was given at least three days before the appearance of the Kopliks[3]. Of the fourteen cases, one was truly severe (a convalescent scarlet fever). Another convalescent scarlet fever with a mild measles rash developed a severe laryngitis and had to be intubated. One diphtheria tracheotomy case with a bronchitis developed a moderate case of measles augmenting the bronchitis. There were twelve mild cases, one moderate case (previous tracheotomy), one severe rash, one laryngitis demanding intubation (scarlet fever case). All cases recovered.

The convalescent serum was obtained from adults and older children. These sera were all Wassermann negative, and were run through a Berkefeld filter. The dose was 5 cc. given intramuscularly[4].

The difference in the mortality is less significant when the details are gone into. In each group there was one severe laryngitis accompanying the measles, demanding intubation. In the case not given serum, the patient on admission had a very severe scarlet fever and a positive diphtheria throat culture. Five weeks after admission the child developed severe measles with bronchopneumonia, and had to be intubed for a marked laryngeal constriction. Bronchopneumonia was the cause of death.

The other measles case which required intubation but received the convalescent serum caused us quite as much anxiety. This case was admitted as scarlet fever, having been transferred from the children's ward of a general hospital, where it had been under treatment for tuberculous pyelitis. One month after admission it was exposed to measles through the outbreak of a case in close proximity in the ward. Convalescent measles serum was given. Kopliks and a mild rash developed. With the rash a laryngitis developed, which became unduly severe. Eventually the constriction demanded intuba-

[3] Ordinarily it is desirable to give the serum late in the incubation period in order to allow a mild measles to take place so that a permanent immunity may be established, because when the serum is given early enough to prevent measles the passive immunity may last only two months. The acquisition of an active immunity to a common contagious disease is often times as valuable an attainment of childhood as a subject learned in school. But the worst time to acquire an active immunity for measles would appear to be before the age of five or during the course of an upper respiratory tract disease. Various factors beyond our control governed the time of administration of the serum in this series.

[4] In five convalescent diphtheria cases not included in this series, whole convalescent blood was injected. Three cases received 10 cc. each, one 5 cc. and one 8 cc. None of these five exposures developed measles, although all five were reported as never having had measles.

tion, which gave prompt relief. Extubation was performed five days later, with no further trouble from the case. Without intubation facilities at the critical time, this case would have undoubtedly been a fatality. Furthermore, the intubation of a measles case is always a most serious measure, owing to the likelihood of ulceration of the larynx. Therefore, there is not much margin between the one fatality and this serious situation which developed in the serum-treated case. However, it is worthy of note that bronchopneumonia did not develop in this case.

The serum cases and controls were run over the same period, between February 8th and April 2nd. Of those exposures to measles not given the serum, four were cases of diphtheria and twenty-one were cases of scarlet fever. Of those exposures to measles receiving the serum, nine were cases of diphtheria and forty-two were cases of scarlet fever.

Summary: Single doses of 5 cc. convalescent measles serum proved efficacious in markedly reducing the severity of an epidemic of measles which invaded the scarlet fever and diphtheria wards. Among seventy-six patients exposed, twenty-five controls were given no serum and all twenty-five, or 100 per cent., came down with measles. Of these controls, sixteen (or 64 per cent. of the exposures) had severe measles. Of the fifty-one exposures with no history of measles who were given convalescent serum, only fourteen contracted measles (or 27.4 per cent.), only one of whom (or 1.9 per cent. of the exposures and 7.1 per cent. of the fourteen cases) had a severe rash. Bronchopneumonia occurred twice in the control group and once in the serum-treated group. Intubation for measles laryngitis was necessary once in each group. Of these two cases, the one in the control group died of bronchopneumonia, and the serum-treated case recovered without bronchopneumonia.

VERMONT STATE MEDICAL SOCIETY

POLIOMYELITIS WORK IN VERMONT

BY CHARLES F. DALTON, M.D.†

THE year 1894 marked the beginning of interest in anterior poliomyelitis in Vermont, for in that year, Dr. Charles S. Caverly, president of the State Board of Health, studied an epidemic occurring near his home city, Rutland, and reported his findings in the *Yale Medical Journal**. This was the first study in this country of the communicable nature of the disease. It was not until 1914, however, that the State Board of Health began its intensive work connected wtih poliomyelitis, this being facilitated by the generous gift of an anonymous donor. Since that year, the gift has been annually renewed and sometimes largely increased, permitting an uninterrupted effort in (1) research for the epidemiological factors, and (2) after-care of the crippled victims left in the wake of the various outbreaks. With the reorganization of the State Board of Health into the Department of Public Health, this work was placed in charge of the Division of Poliomyelitis.

The early advisors in the "Vermont plan" of poliomyelitis study and control were Dr. Simon Flexner of the Rockefeller Institute, Dr. M. J. Rosenau of Harvard, and Dr. Robert W. Lovett of Boston, and to their wise counsel and unfailing effort is largely due the success which this division has achieved. Since the death of Dr. Lovett, Dr. Frank R. Ober of Boston has been the staunch supporter of the after-care work. When most of the research agencies gave up their study of this disease, an agreement was entered into by the Vermont Department of Public Health and the Harvard Infantile Paralysis Commission whereby their efforts were united in the research problem, and for several years Dr. W. L. Aycock has been in charge of the combined work.

Vermont has been a fruitful field for the study of poliomyelitis and its after-care on account of several factors. The epidemic of 1914 with 306 cases forcibly called the attention of both physicians and laymen to this disease, and the interest then aroused has never been markedly abated. Although no such epidemic has since occurred, there have been enough outbreaks and menacing conditions to keep the edge on the situation, and it is a very unsual case which is not brought to the attention of the Department of Health within a few hours of being seen by the physician. All cases are then followed up, first by the research worker, and a little later by the after-care nurses. This service has now become an important part of the health program and is so recognized by the doctors and the public generally. A situation has therefore naturally worked out which offers coöperation on the part of the profession and an interested expectancy on the part of the people.

It is not the object of this article to give a history of the disease in Vermont. That has been done in a volume published in memory of Dr. Caverly.‡ Nor is this the place to recount the findings of the research laboratory. Dr. Aycock's publications in various journals constitute a contemporary comment on this work. It is desired to direct attention to the extent to which the after-care work has grown and some of the results of after-care treatment as shown by the 1927 report of the Division. This report is submitted by Miss Bertha E. Weisbrod, director, and is herewith transmitted.

YEARLY REPORT
AFTER-CARE DIVISION FOR POLIOMYELITIS
1927

Number of patients on record under supervision		954
Number of patients seen during the year		589
New admissions		183
Polio	53	
Onset within a year	35	
Onset more than a year previous	18	
Not Polio	130	
Old admissions		771
(Cases admitted to treatment during previous years and still under supervision)		
Old admissions seen during the year	406	
Polio 270 Not Polio 136		
Old admissions not seen during the year	365	
Polio 166 Not Polio 199		
Clinical examinations made during the year		878
Individual cases examined at clinics		479
Home visits made during the year		601
Office visits made during the year		91
Doctors visited during the year		79
Exercises (number of patients for whom prescribed)		318
Total number of admissions to Hospitals		92
Total number of patients admitted		82
Total admissions for operations	74	
Total number of patients operated on	66	
Polio 47 Not Polio 19		
Total admissions for treatment	18	
Total number of patients treated	16	
Polio 8 Not Polio 8		
Apparatus		
New Pieces applied during the year		280
Pieces adjusted or repaired		139
Orthopedic corrections made to shoes		420

*Yale Medical Journal, Nov., 1894.

†For record and address of author see "This Week's Issue," page 775.

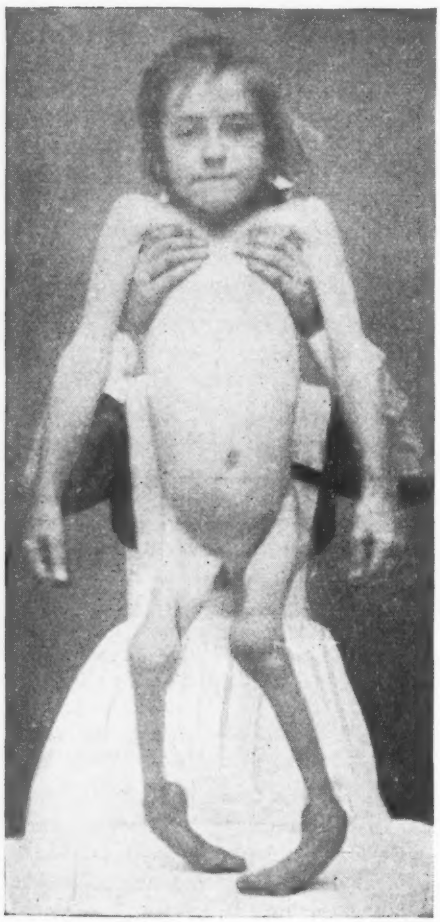
‡Infantile Paralysis in Vermont, published by State Department of Public Health, 1924.

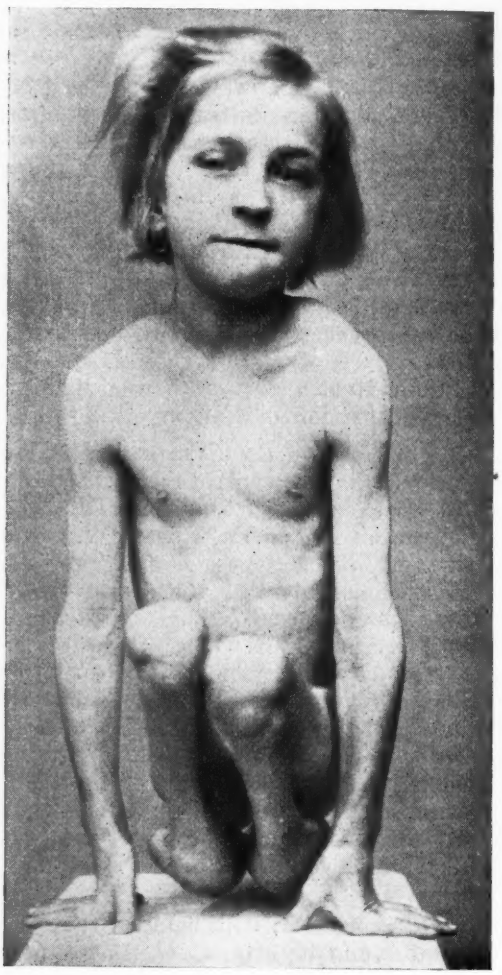
Improvement of cases shown during the year

Percentage based on 440 of cases seen as the remaining 149 could not be figured in for the following reasons:

1. Patient came to clinic for diagnosis only and was referred back to family Doctor.
2. Patient was from out of State and treatment was not followed up.
3. Patient has not been seen since treatment was recommended.

Per cent. of cases that have followed treatment 84.7





Deformities resulting from uncared for Poliomyelitis.

Double hip and knee flexion; knock knees; and feet turned back so that body weight was borne on dorsum of feet. September, 1919.

Per cent. of cases that have improved..... 85.4

Per cent. of cases operated on that have improved 98

Number of patients discharged from treatment during the year..... 199

Number of cases on record beginning the year of 1928..... 755

Clinics were held in May, August, and October at Rutland, Proctor, Windsor, Burlington, St. Albans, Montpelier, Barre, St. Johnsbury, and Barton. Dr. Ober saw the patients in August, and was assisted by his partner, Dr. Ghormley. The May and October clinics were held by Miss Kron and myself.

There were forty new cases of Poliomyelitis this year. Thirty-five of these were seen by us. Thirty-one needed after-care treatment, two were abortive, one was a practical recovery, and one died. Of the five cases not seen, one was abortive, two were practical recoveries, and two died.

The muscle involvement has been high and the paralysis severe this year.

In the group of thirty-one cases under supervision there are thirty-two paralyzed legs. Five of these are almost completely flail, and show little sign of any practical return of muscle power. Twenty-four arms and shoulders were paralyzed, five of which are also practically flail, and show little sign of recovery. Sixteen patients have considerable trunk paralysis.

Treatment recommended is being followed faithfully by the parents of all but three of the patients. These three are developing deformities. The other patients, with the exception of

where muscles are completely paralyzed, are showing very encouraging improvement in muscle strength, and even in the most severe cases deformities due to contractions have not developed.

The accompanying graphic charts show the development of the work since 1920.

Due to the fact that previous to 1920 records were not kept as at present it is not possible to include the earlier years. The work for the year 1924 cannot be charted accurately because in that year the date for the giving of our report was changed from April 1 to January 1.

The charts show that the number of patients under supervision has doubled since 1920, and that the number of patients seen during the year has almost tripled.

The patients under supervision have made very encouraging gain this year.

Through the kindness of friends interested in the work we have been able to continue boarding six of our older patients in homes where they receive the special care that they need.

The Fletcher D. Proctor Fund for Crippled Children has helped with the hospital expenses of two patients who could not receive help from our Poliomyelitis Fund, has paid for board and exercises for four patients who could not be cared for in their homes, and furnished apparatus for six patients.

A gift of $1000 was given to be used for special work that could not be paid for out of our regular fund. This gave help to many who otherwise would have gone without treatment.

Another gift, that of a tutor for a patient who had had to lose two years of school, gave very gratifying results. The patient was obliged to spend all of her time on her back, and in three months did the year's work which enabled her to enter High School. Despite her crippled condition she has been on the honor roll ever since the beginning of the school year.

Same patient leaving Hospital 1920.

Reduction of Deformities.
September, 1919.

Same Patient December, 1927.

An Astragalectomy operation was performed on left foot January, 1925, which enables patient to walk well with one brace.

REPORT OF THE CRAFT WORK IN CHARGE OF MISS VAN LINSCHOTEN

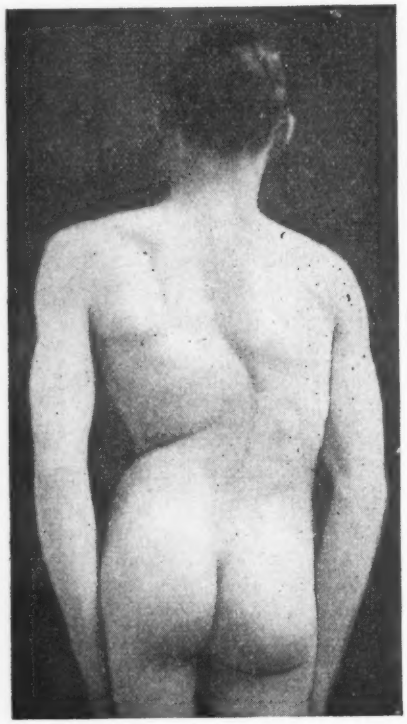
31 Patients are Craft Workers.
5 New Patients have been admitted this year.
5 Patients have given up the work.

1 has married.
1 has returned to school.
3 have learned a Craft that they can make and market themselves.

No work has been done with the group of children at Ormsbee House.

$1416.05 has been paid to the patients this year for their work.

Scoliosis resulting from Poliomyelitis. March, 1926.



The year of 1927 has been one of progress and encouragement.

The Craftsmen-at-Work Exhibition in Boston last March did much to encourage the workers and to advertise the work out of the State. The good results have been felt throughout the year, and we are pleased that it is possible for three of our Craft Workers to take part in the Exhibition which is being held again this year.

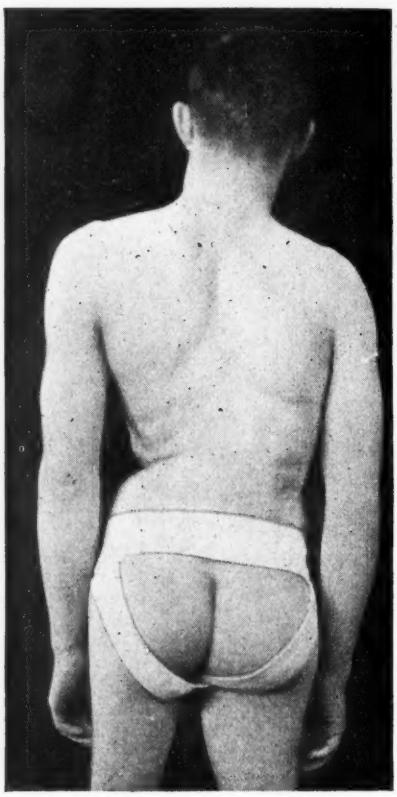
Among the new types of work that have been added this year to the Crafts already taught is Italian Quilting. A balsam pillow developed in this style of needlework is very popular.

Work has been on sale at the following places: Woodstock Craft Shop, Woodstock; Everyday Bookshop, Burlington; Houck Studio, Albany, N. Y.; Woman's Exchange of the Oranges, East Orange, N. J.; Noah's Ark Gift Shop, Winchendon, Mass.; Women's Educational and Industrial Union, Boston, Mass.; The Original Thread and Needle Shop, Boston, Mass.; Woman's Exchange of Troy, N. Y.

In addition to these outlets for the work we have had the following sales:

Mrs. M. C. Twitchell of Burlington, as in previous years, kindly opened her home for a sale which was very successful.

Same Patient. December, 1927.

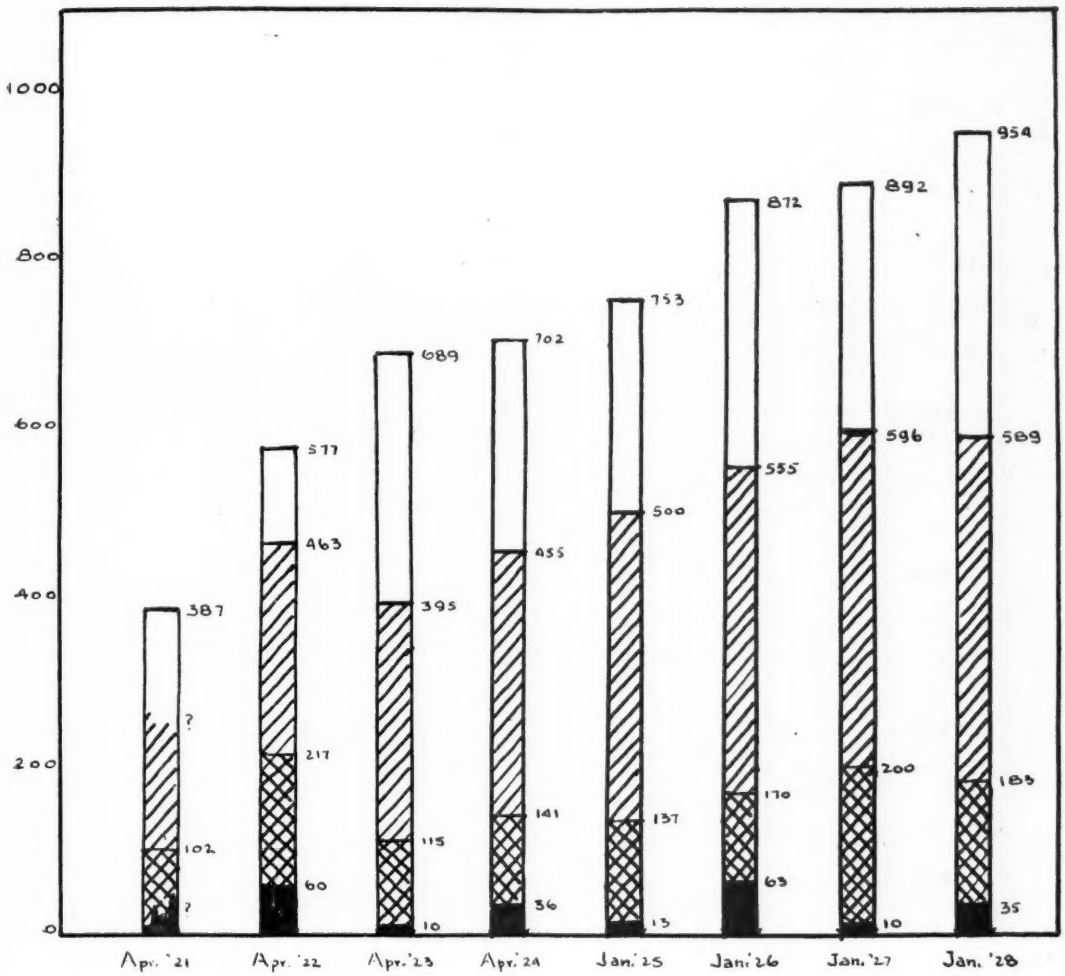


Treated three months with plaster stretching jacket followed by spine fusion June, 1926.
Patient can now hold himself erect without apparatus. Fusion solid.

The Woodstock Street Fair, held for the benefit of the Episcopal Parish House, allowed us to sell the work on a 10% commission.

The Windsor County Fair gave us the use of a free booth.

The Klifa Club, Burlington, held its annual sale for us in November. This sale was not as successful as usual because of coming soon after the flood. This failure to dispose of the work was not felt, however, because Mrs. G. R. Critchlow held a sale for us at her home in Buffalo, N. Y., before Christmas at which almost all of the articles on hand were sold.

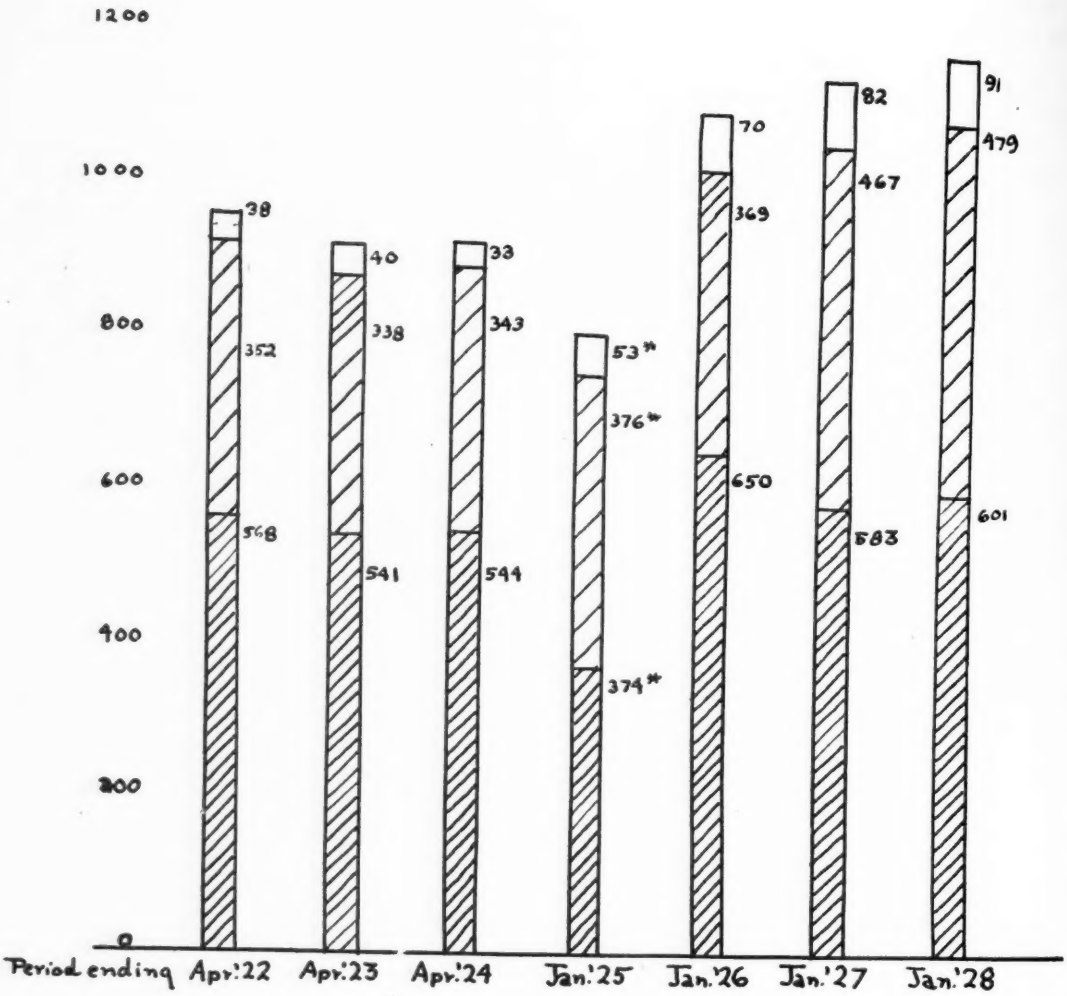


Total Number of Cases Under Supervision, Seen and Admitted, Including Recent Cases of Poliomyelitis

1920 - 1927

Total number supervised
" " seen.....
" new admissions.....
" number recent polio.

CJW
'28.



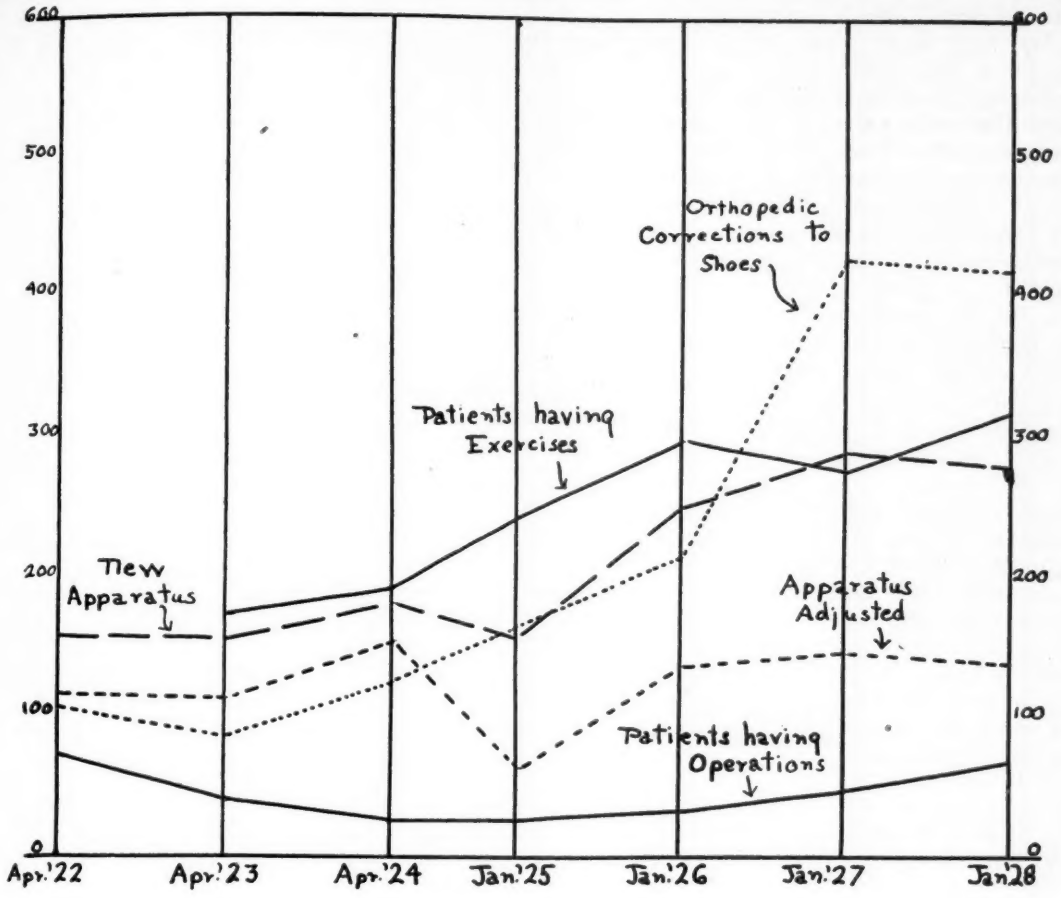
Examinations at Clinics, Home and Office Visits

1921 — 1927

* Nine months period only

Number office visits –
" clinic exams –
" home visits.

CJW
28



Treatment of Cases.

1921—1927

ELECTRO-SURGERY*

BY WILLIAM D. MC FEE, M.D.†

AT the present day, when describing the use of electricity in surgical procedures, reference in almost every instance implies the employment of high frequency electrical currents which may have different characteristics such as the damped wave produced by means of a high frequency electrical apparatus having a spark gap in circuit and the undamped wave which we get from a high frequency apparatus having radio tubes in its circuit.

Tissue may be separated or cut through by a current from a high frequency apparatus in which the oscillating circuits are so balanced that a wave which is not more than 20% damped is produced, or for the same purpose we may use the undamped wave high frequency current giving a constant and steady heat effect which will quickly cut its way through, an ordinary needle serving as the active electrode. This electrical action has been described by various writers using many different names, some of which are very suggestive of commercialism, conveying no expression of the particular procedure involved.

Many times attention has been called to the importance of avoiding a duplication of terms used in describing electrical current effects or methods of treatment, as this results in much confusion of ideas. And once more a plea is made, as first alluded to by the writer about ten years ago, for the more general use of the term

*Read at the Annual Meeting of the Vermont State Medical Society at Middlebury, October 14, 1927.

†For record and address of author see "This Week's Issue," page 775.

"electro-surgery" which comprises the use of electricity in its many forms for the destruction or removal of body tissue.

Dr. Harvey Cushing, Professor of Surgery in Harvard University stresses this point in the following quotation from an extremely valuable contribution to the annals of surgery of the subject of "Meningiomas Arising from the Olfactory Groove and their Removal by the Aid of Electro-Surgery" published in *The Lancet*, of London, England, June the 25th, 1927: "Since, by the employment of a small ("active") electrode and a large ("indifferent") electrode, all the cutting effects can be confined to the tissues in the immediate vicinity of the active electrode, it constitutes a surgical tool which bids fair to replace the scalpel in certain fields of work.

Naturally enough, following Pozzi's lead, this new adjunct to surgery has for obvious reasons been chiefly restricted to the removal of malignant growths and has, therefore, remained largely in the hands of specialists who are called upon to treat malignant disease in inaccessible places. Those who have seriously employed these methods in the extirpation of carcinoma about the mouth and other body orifices have written enthusiastically on the subject. But meanwhile, owing to the variety of trade names which have been introduced, no little confusion has arisen as to the meaning of fulguration, diathermy, endothermy, and so on. No less has there been confusion in regard to the various forms of current that are employed, whether unipolar or bipolar, whether for cutting, dehydration, or coagulation. For purposes of simplification, therefore, it would seem better for the time being to utilize the single term of "electro-surgery" for all these varied performances."

Electro-surgery has a distinctive place in the field of general as well as special surgical endeavor, as it may be used with safety and bring satisfactory results in the treatment of many conditions heretofore dangerous and inaccessible by the employment of knife surgery. Oftentimes the surgeon encounters pathological conditions which he cannot contend with successfully, due to the liability of meeting with uncontrollable hemorrhage, either because the tissue is such that it will not retain ligatures or because sloughing following his operation may extend to neighboring blood vessels and produce troublesome and even dangerous secondary bleeding.

The procedure of electro-surgery, when used by the surgeon of proper training and experience, is readily controllable and entirely safe.

It is important in the treatment for destroying any lesion, particularly that of a malignant nature, that the first operation should completely remove or destroy the growth; otherwise we might stimulate new diseased cell activity.

Dr. George B. Eusterman and Dr. A. U. Desjardins of the Mayo Clinic have published some interesting reports concerning the value and importance of electro-surgery, particularly in the removal of accessible growths. Eusterman says, "Surgical diathermy is assuming greater importance in some clinics, especially in the removal of malignant and benign tumors of the face, skull, and oro-pharynx. Electro-coagulation is superior to the ordinary methods of cautery." Desjardins says, "The surgical application of diathermy is based on so concentrating the heat at one point as to produce tissue destruction. By means of suitable electrodes, such concentration and consequent destruction can be varied within fairly wide limits. Diathermy differs totally from cautery. In the former, the heat is not transmitted to the tissues by a hot instrument as is the case with the cautery. When the diathermic elctrode is brought in certain relation to the tissues, the instrument remains cool, the heat being produced in the tissues themselves by their resistance to the passage of the electrical current."

The effects on body tissue when the high frequency electrical currents are used for its removal are ordinarily referred to as desiccation and coagulation, desiccation meaning the effect of drying or dehydration, this action being superficial, and coagulation meaning the deep destructive effect of the high frequency current. For the purpose of electro-surgery, apparatus should be used having a constant and consistent output of current of sufficient capacity and which will produce the required quality of spark of contact energy. The spark gap which regulates the quality and indirectly the volume of the electrical discharge is a very important part of the apparatus.

Reference to the term "electro-coagulation" in this paper will mean the deep destruction or coagulation of tissue by the high frequency current in direct contact by means of the active electrode connected with one terminal in conjunction with the indifferent electrode connected with the other terminal of the high frequency machine and applied to any convenient part of the body. This constitutes a bi-terminal high frequency application with the damped wave characteristic. Its use is indicated for the removal of many forms of cancer which are external or accessible in cavities, also in treating deep seated growths after they are exposed by means of the ordinary surgical procedure. There is very little sloughing beyond the border of current contact and scarcely any pain or other disagreeable reaction following the treatment. Blood vessels and lymph channels are immediately sealed so that there is no blood loss and these possible entrances for the migration of disease cells are effectively shut off and closed.

In the operation for the removal of growths by electro-coagulation, the following technique is the one usually employed by the writer: A large indifferent metal electrode usually 8″ x 6″ or larger, is applied to some part of the body where good contact can be obtained as on the

back below the angle of the scapula; general anaesthesia or local such as nerve blocking being used. The active electrode consisting of a surgical knife fitted in an insulated handle is used in contact with the tissue to be removed. The current is that delivered from a suitable high frequency apparatus of the d'Arsonval type, which will deliver a high milliamperage and remain constant in action. The current is turned on by an assistant, and gradually increased until coagulation occurs as shown by the cooked appearance of the tissue. The knife inserted just beyond and below the margin of the growth is then gradually moved through the circumference with a rotary motion, the growth being lifted, as it becomes separated, with the other hand by means of a suture imbedded in the structure or by forceps. This is continued until entire removal is accomplished. If conditions and technique are correct no bleeding results and a clean seared surface is assured. Very little if any pain follows, and a superficial slough occurs leaving healthy underlying tissue.

The method of electro-coagulation is adapted to the treatment of a great variety of lesions and growths in many parts of the body, and my interest has been particularly attracted to the good results obtained in the treatment of a number of cases similar to the following:

J. S. ——, aged 80,—was operated on by the writer for removal of a papillary carcinoma at the base of the tongue about the size and thickness of an English walnut. The patient was anaesthetized with ether, a mouth gag being inserted; the tongue was held in position by a long suture passing through its center; the cheek was divided by a lateral incision extending from the angle of the mouth to a point midway to the angle of the jaw, thus exposing the growth, which was removed by cutting it away with a knife electrode according to the method of electro-coagulation previously described. There was no bleeding, as all vessels were immediately closed off by the electrical energy as the operation proceeded. The surface left after removal was desiccated and the line of demarcation extended well beyond the diseased tissue. The absence of bleeding makes it much easier to visualize just what is taking place in the operative field, and we are thus able to perform our work with more accuracy. By this method we are better able to destroy malignant cells, which may be at some distance beyond the growth, thus diminishing any tendency to recurrence.

R. W.—aged 55—was operated on by the writer three years ago for the removal of an extensive leucoplakia involving the cheek adjacent to the left lower jaw; this case had been previously treated by radium for one year with no result except that the disease was much aggravated, the patient suffering considerable pain after each application. The radium treatment in this case was given by a physician who was skilled and experienced in its use. The diseased tissue was removed by electro-coagulation; the indifferent metal electrode, size 8″ x 10″, was placed under the shoulders, and the surgical knife in an insulated handle was used as the active electrode; this was carried around the growth beyond its margin, the growth being gradually lifted from its bed as it was separated by the current contact. Sloughs covered all the coagulated area, which is usual, and these separated in about two weeks. During this time the patient was able to be about every day, had very little discomfort, required no narcotics, and had no blood loss during or after the operation. Up to the present time the area treated has held its full degree of improvement.

Malignant conditions involving the mucous membranes, as cancer of the tongue, leucoplakia, etc., usually respond very little, if at all, to treatment by x-ray or radium alone, whereas when electro-coagulation is used, the results are usually satisfactory. In coagulating tissue which is close to bony structures, care should be exercised not to coagulate deeply enough to destroy the periosteum, as it takes considerable time, even many months in some cases, for this to heal. The entire bony structure may be destroyed when necessary. Caution should also be exercised in all these treatments to see that the indifferent electrode closely approximates the skin surface; it should be held in place by a bandage, preferably of elastic material, so that if the patient moves it is not so easily dislodged. Very severe burning may result from loose or improper electrical contact, due to the arc formed in the air space between the electrode and the skin; good electrical contact, therefore, must be maintained throughout the entire operation.

Electro-coagulation, if properly performed, is not accompanied by surgical shock, hemorrhage, or any loss of blood during or after the operation. In treating growths in the mouth, sometimes the coagulation will not go beyond the point of actual contact, and it is well to watch these cases during the sloughing process so as to guard against possible bleeding when the slough begins to separate; this, however, will very seldom occur. While the operation of electro-coagulation is going on, if any bleeding should take place, it may be immediately controlled by applying the active electrode to its source.

While the foot switch may be used by the operator, with which to turn the current on and off, it has the disadvantage of dividing the attention of the operator between his hands and his feet; also, when using the foot switch the current strength cannot be regulated, so that for the ordinary purposes of any electro-coagulation operation the aid of a good assistant, stationed at the apparatus, who can quickly change the control switch of the transformer so that it will deliver a greater or less amount of current, changing at once when signalled by the operator, gives the most satisfactory results.

The operator may disregard any meter reading when using electrical currents to coagulate, as his best guide is his observation of the changes taking place, or, in other words, the reaction on the destroyed tissue. The amount and character of current used, together with the time needed for its application, must depend largely on knowledge gained from previous experience.

Electro-desiccation has the combined proper-

ties of shrinking and sterilizing all tissue with which it comes in contact and it may accomplish this without extensive destruction. Electro-desiccation is the method of choice in the treatment of small superficial skin lesions especially those which are elevated from the surface and for removing such hypertrophic conditions of the mucous membranes as polyps, tonsils and hemorrhoids. As this is a mono-terminal application, it may be used with absolute safety, is under the entire control of the operator, is followed by a minimum amount of slough, no after pain, and the tissues are dehydrated with a minimum amount of underlying trauma. In the treatment of diseased tonsils and hemorrhoids, the method of electro-desiccation is the one preferred when proper technique is employed. Many hundreds of cases of diseased tonsils during a period of eighteen years have been successfully treated by the writer according to the following technique: For convenience of application I have used an electrode devised by me especially for this work. I prefer a white spark, the so-called cold spark, instead of the red or flaming one. Crypts containing foreign substances are cleaned out before beginning treatment. The position of the patient should be upright in the chair facing the light, if direct light is used, or may be treated by artificial light reflected from a head mirror. No mouth gag is necessary. Swab the tonsils, pharynx, and uvula with equal parts of adrenalin 1 to 1000, and solution of cocoaine 10 per cent. or any equally efficient anaesthetic. With the mouth wide open, keep the tongue out of the way with a wide glass or wooden tongue depressor; introduce the electrode so that its glass covering, which projects from one quarter to one-half inch beyond its metal point, touches the tonsil; turn on previously tested current delivered from the Oudin terminal of a high frequency apparatus, then rapidly pass spark over tonsil surface until reaction occurs, as shown by a white film. The tonsillar tissue should not be penetrated by the electrode used. In nervous patients we may have to quickly withdraw the electrode, if gagging occurs, then go back and repeat. In most cases, both tonsils may be treated at one sitting. A slight irritation of the throat is felt for one or two days; in a period varying from five to seven days the throat will be found clear, and similar treatment is then given at these intervals until the maximum result is secured, usually in about six weeks, according to the amount of hypertrophy present. The length of the spark used varies in different cases and individual judgment must be exercised.

In the treatment of hemorrhoids and polyps, the application of the current is somewhat similar except that we usually bring the active electrode in direct contact with the tissue to be removed, the pile tumor or polyp having previously been clamped. Very little after-care is necessary and these patients are able to resume their accustomed activities on the completion of the operation.

Electro-desiccation of tissue may be produced either by the bombardment of the spark of various lengths or by the direct contact of the metallic electrode inserted into the tissue, although when direct contact is made the resulting action or destruction is more properly coagulation.

The use of the so-called cutting current of high frequency for removing a growth after the entire mass has been coagulated may have a slight time saving advantage and seems to be well adapted for the purpose of rapid dissection of tissue, but unless one is particularly well skilled in its use the amount of destruction may be more than is desired, for it must be passed through the tissue very rapidly and its action is not so readily controlled as is that of the technique heretofore described.

Professor W. T Bovie of Harvard University has experimented with an unique outfit for producing the combined effects of the coagulating and cutting currents and has done some very creditable research work tending toward the solution of an accurate measurement of the electrical energy necessary to destroy the various bodily tissues. When this is accomplished, we may then be able to select the particular quality and quantity of current adapted to the condition to be treated.

Every credit for the development of the use of high frequency currents in the field of surgery in this country is due Dr. William L. Clarke of Philadelphia who was among the first to call attention to the value of these currents in surgery.

The title of this paper, "Electro-Surgery," is used with the hope that it may call attention to the importance of a terminology that has a definite meaning in this specialized work, embracing as it does the use of electricity as an additional agent of value to the use of the scalpel in the field of surgery.

The best results, particularly in the treatment of inaccessible growths, will be obtained by the joint efforts of the surgeon skilled in the knowledge and use of knife surgery, and the surgeon having similar knowledge of the use and action of electricity in a surgical sense.

OBITUARIES

CHARLES E. CHANDLER, M.D.

Dr. Charles E. Chandler of Montpelier, Vermont, died at the home of his son, Dr. Charles P. Chandler, April 30th, 1928, after a prolonged illness from cardiovascular disease. He suffered an attack of hemiplegia in 1914, but did not give up his practice until 1925, when his disease developed severe symptoms.

Charles Elmer Chandler was a native of Montpelier, Vt., born May 24, 1861, a son of Dr. Charles M. and Abbey J. Chandler. He was a graduate of the College of Physicians and Surgeons of New York City in 1883, the third of his family line to enter the profession of medicine. He commenced the practice of his profession that year, and continued actively engaged in it until his health caused him to give up his practice.

He was married October 27, 1887, to Cora Stowell Porter of Middlebury. Two sons were born to them, Dr. Charles P. Chandler and Hazen Atherton Chandler, both of whom survive him. Mrs. Chandler died in 1922.

He was attending surgeon of Heaton Hospital from its opening, and he used his best energies to promote its development and success. He was the leading surgeon of central Vermont for many years, and as a consultant he was much sought after even beyond this territory. Besides being actively engaged in general surgery, he gave special attention to diseases of the eye and ear, in which field he became particularly skillful. His chief characteristics were his ready and accurate diagnosis, his rapid operative dexterity, his thorough and careful study of cases, his whole-souled devotion to his profession, and his widespread influence for harmony among his associates. He was highly respected and deeply loved by his patients—he won their entire confidence.

He was a Fellow of the American Medical Association, a member of the Vermont State Medical Society, New York and New England Railway Surgeons' Association, and of the Washington County Medical Society.

RAY ERNEST SMITH, M.D.

Dr. Ray Ernest Smith, one of the leading members of the medical profession in the City of Rutland and the State of Vermont, died at the Rutland Hospital on the 23rd of April.

Dr. Smith, who was born in Ellenburg, N. Y., in 1882, was prostrated about seven weeks before his death by an acute diverticulitis; he was operated upon and appeared to be putting up a winning fight until March 19th when a cerebral embolus all but took his life and left him with a profound hemiplegia. On April 17th another embolus lodged in a coronary vessel and he survived but six days.

Dr. Smith was a student in science of Syracuse University and took his medical degree at Albany Medical College in 1908 and in the same year began the practice of his profession in the City of Rutland.

When the United States entered the Great War Dr. Smith was an assistant surgeon of the First Regiment of Infantry, Vermont National Guard, and when that regiment was federalized he followed the colors, although Mrs. Smith was critically ill at the time and both believed that parting to be their last.

His services in the war were unusual. Sent overseas with the first National Guard contingent to cross, his ability and energy won for him many exceptional opportunities and he declined none of them. He participated in the Meuse-Argonne, St. Mihiel, Aisne-Marne and Champagne-Marne campaigns, was decorated with the Croix de Guerre and was twice cited for bravery. At the close of the war he was chief surgeon of the First Corps Air Service.

After his return to civil life he followed up his vast experience gained in the war and devoted himself to the surgical side of his profession, rather than to the medical.

In 1925 he was appointed on the Surgical Staff of the Rutland Hospital and at one time was a surgeon of the Rutland Railroad.

Not only as a soldier and a surgeon did Dr. Smith excel, but he was a beloved citizen, whose going away leaves many a sad heart among a host of friends in all walks of life.

He served his city in various capacities and at the time of his death had just been unanimously re-elected President of the Board of Aldermen.

Dr. Smith was a 32nd degree Mason, a Shriner, a Rotarian, a member of the Vermont Lodge of the Knights of Pythias, a member of the American Legion and of numerous other fraternal, social and patriotic organizations.

Just before his return from overseas duty Dr. Smith was elected President of the Rutland County Medical and Surgical Society and he was a very active member of national, state and local medical associations and at the time of his death was President of the Rutland Clinical Club. He was a member of the New York & New England Association of Railway Surgeons.

He married Ethel Marie Burgess, who with his mother, two sons and two daughters, survives him. One son is a student at the Albany Law School, and the other, a student at Dartmouth, will follow his father's profession.

Dr. Smith was a member of the Methodist Episcopal Church and his funeral was attended by a congregation far beyond the capacity of the local edifice. Burial was at Evergreen Cemetery.

J. M. H.

NEWS ITEMS

Abbie Cushman, wife of Dr. James N. Jenne of Burlington, the Dean of the Vermont Medical College, after returning from an evening with friends, died suddenly at her home Monday evening, May 7th.

Dr. and Mrs. W. N. Bryant, who have spent the winter in Springfield, have returned to their home in Ludlow.

The recent death of Dr. A. Elie of Island Pond will be given due notice in the obituary column next month.

BENNINGTON COUNTY MEDICAL SOCIETY NOTES

The last meeting was held April 25th. The subject discussed was Pleural Effusions and the discussion was illustrated by many excellent X-ray films. It was a most instructive meeting.

Doctors Wilson, Ross, Gardenier, Buchanan, Hurley and Goodall plan to spend their vacations at Cape Cod. The Cape is a popular place with the medical fraternity of Bennington.

The new additions to the Putnam Memorial Hospital are now ready for occupancy, giving consider-

able much needed room to this growing institution. The hospital, named and endowed in memory of the late Henry W. Putnam of Bennington, is most pleasantly situated on a hill overlooking Bennington. An extended report on this institution will appear soon.

. Many members of the profession here will take advantage of the nearness of Albany, N. Y., to attend the New York State Meeting this month.

Frank E. Dean, M.D., who has been in Florida recuperating, has resumed his practice.

Frank J. Hurley, M.D., who spent one and one-half years at the New York Polyclinic, has resumed his work here.

JOHN D. LANE, M.D., *Secretary.*

STATE DEPARTMENT OF PUBLIC HEALTH REPORT FOR APRIL, 1928

The incidence of communicable diseases during the month of April is as follows: Chickenpox, 121; diphtheria, 4; German measles, 6; measles, 282; mumps, 193; poliomyelitis, 1 (St. Albans City); scarlet fever, 40; typhoid fever, 16 (14 Rutland City); tuberculosis, 12; whooping cough, 114.

At the Laboratory of Hygiene, the following examinations have been made:

Examination for diphtheria bacilli	242
" " Widal reaction of typhoid fever	62
" " malarial parasites	0
" " tubercle bacilli	185
" " evidence of syphilis	270
" " gonococci in pus	97
" of blood for contagious abortion in cattle	154
" " blood for white diarrhea of fowls	289
" " water, chemical and bacteriological	77
" " water, bacteriological	107
" " milk, market	13
" " milk, submitted for chemical only	1
Examination for milk, submitted for microscopical only	51
" " milk, submitted by Department of Agriculture for added water	2
" " foods	34
" " drugs	0
" for the courts, autopsies	1
" " the courts, miscellaneous	12
Autopsies to complete death returns	1
Examinations of animal heads for evidence of rabies	0
Miscellaneous examinations	51

Reports from the Division of Venereal Diseases are as follows:

Cases of gonorrhea	42
" " syphilis	56
" " gonorrhea reporting for treatment	12
" " syphilis reporting for treatment	15
" for intravenous treatment	5
Total treatments	180
" gonorrhea outfits distributed	130
" Wassermann outfits distributed	308

The Division of Aftercare for Poliomyelitis reports 20 patients seen, 1 new piece of apparatus was fitted, 13 orthopedic corrections made, 4 pieces of apparatus altered. Four patients were admitted to hospitals and six patients were discharged from hospitals. Sales from articles made under direction of the vocational teacher amounted to $34.84.

In the Division of Maternity and Infancy, the nurse visited six towns, meeting with Farm Bureaus and Women's Clubs.

NEW MEMBERS

Dr. W. W. Angell, Randolph.
Dr. W. O. Brown, Newport.
Dr. T. M. Barber, Rutland.
Dr. J. T. Rudden, Bellows Falls

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 14141

FOUR MONTHS' DYSPNEA WITHOUT EVIDENT HEART TROUBLE

MEDICAL DEPARTMENT

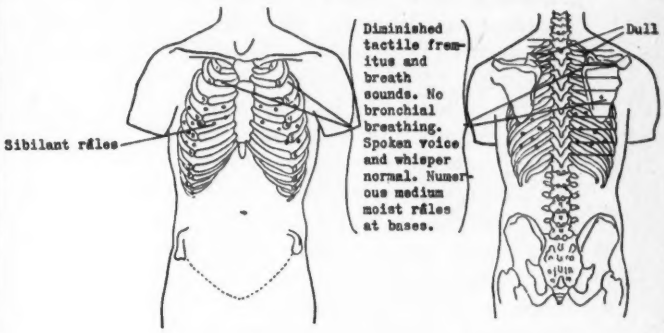
An Italian laborer thirty-six years old entered January 5 complaining of dyspnea of four months' duration. He spoke very poor English and often contradicted himself. The history is incomplete and unreliable.

He had always had "asthma", worse in winter and aggravated by frequent winter colds. Further details were not obtainable. The asthma was apparently paroxysmal dyspnea with a good deal of coughing. Since August he had had a cough which had grown steadily worse, with ten to fifteen ounces of sputum daily, white or yellowish, occasionally foul, twice bloody. He had never been incapacitated by his asthma until four months before admission. With the onset of marked dyspnea at that time his face was swollen for several days. The dyspnea had increased, though at times he felt better. Since the onset he had steadily lost strength and six pounds in weight. He had had trouble in sleeping, whether due to orthopnea was questionable. He had not worked outside his own house since October 1, partly because of lack of work. Beginning in the middle of October he had frequent headaches and attacks of dizziness coming in two-week periods with remissions of a week or two. For the past month he had had none. Since November 1 he had been unable to work at all on account of dyspnea. For three months he had urinated twice at night. During the past month he had had occasional diplopia. During the past three weeks his legs and feet had been swollen two or three times. For two weeks he had been in bed on account of dyspnea, cough and edema. Recently his stools had been black. A day or two before admission he vomited.

The family history is negative.

He had questionable scarlet fever in childhood. He bled easily. He had had malaria. Six months or a year ago when working in a rubber factory he noticed pyuria after inhaling gas.

Clinical examination showed a fairly well developed and nourished man, very dyspneic and wheezing. Face and lips extremely cyanotic, almost black. Face slightly puffy. Barrel chest. Expansion poor. Lungs signs as shown in the diagram. Apex impulse of the heart felt in the


Sibilant râles
Diminished tactile fremitus and breath sounds. No bronchial breathing. Spoken voice and whisper normal. Numerous medium moist râles at bases.
Dull

fifth space 7.5 centimeters from midsternum, one centimeter inside the midclavicular line. Action regular. Rate 110. Right border of dullness 2 centimeters, supracardiac dullness 5. Sounds of good quality. Pulmonic second sound accentuated. First sound split at the apex. No murmurs. Pulses and blood pressure normal. Artery walls not thickened. Brachials tortuous. An electrocardiogram showed well marked right axis deviation, normal rhythm, rate 120. Abdomen tense, distended, tympanitic. Palpation unsatisfactory. Marked pitting edema of the shins and ankles. Pupils and reflexes normal. Vessels of fundi somewhat tortuous.

Amount of urine normal, specific gravity 1.020 to 1.032, a very slight trace of albumin at all of three examinations, rare to occasional leukocytes, occasional red cells and rare to many granular casts in the sediment of two specimens. Renal function 40 per cent. Blood: hemoglobin 90 to 100 per cent., 12,000 to 10,000 leukocytes, 65 per cent. polymorphonuclears, over 6,500,000 reds at two counts, slight variation in size and shape, some achromia, platelets large and increased in numbers. Wassermann negative. Non-protein nitrogen 41. Sputum purulent, foul at one of two examinations, blood at one, no tubercle bacilli. Stool negative.

X-ray examination showed the heart shadow considerably increased in size in all diameters, suggesting an enlarged and dilated heart. The hilus shadow showed increase in size and density. Both lung fields were less than normally radiant. The outline of the diaphragm was indistinct on the left.

Temperature 100.8° to 99.5°, rectal. Pulse 101 to 132. Respirations 24 to 36.

Until January 9 the condition was practically stationary. The patient was dyspneic and uncomfortable, but the condition did not appear to be at all critical. January 7 the visiting physician found an enlarged liver.

January 9 the patient suddenly had extreme difficulty in breathing, marked cyanosis and feeble pulse. He was unresponsive, with rolling eyes. The systolic blood pressure was a weak 60,

the diastolic not obtained. The heart action was rapid, the sounds of fair quality. Both lungs were full of moist râles and rhonchi. The breath sounds showed little air entering the lungs. Expiration was difficult. The patient was given ten grains of caffein and two doses of ten minims of adrenalin. The systolic blood pressure rose to 95, the diastolic to 75. Because of the high red count venesection was done, but only 200 cubic centimeters was withdrawn with difficulty and with no apparent relief of the dyspnea or cyanosis. Oxygen by nasal catheter gave little relief. The lungs showed less moisture, though the breathing was no less labored and no more air entered than before. He continued unresponsive for two hours, with no change in the lung condition, though the heart action became rapid and strong, with blood pressure 95/75. He showed no further response to medication and died a respiratory death five hours and a half after the onset of the attack.

Discussion

BY RICHARD C. CABOT, M.D

NOTES ON THE HISTORY

Foul sputum is not a common thing at all. If a patient really has it, it is very strong evidence of lung abscess or bronchiectasis. But it is necessary to smell it yourself, because you cannot take anybody's word for it.

If you take the history as correct in that respect, the headache is important. In the first place a laboring man does not have headaches except for very good reason. When you see all sorts of patients you feel that headache is not of much importance. But when we were working in France during the war we took headache very seriously. The kind of people we saw then, men doing work outdoors, do not often have headache. Unless it is incorrectly reported it is probably important. It certainly does not come from heart disease.

At thirty-six dizziness is of course important as it would not be in an old man.

Black stools as an item in the history are of very little importance, because people use the word "black" so inexactly. Dark colored stools mean nothing in particular unless they are the real tarry black. It is just one of the facts in the history which often turn out wrong, like statements about jaundice.

What have we up to the end of the history of the present illness? Dyspnea, apparently paroxysmal, headaches, edema, and foul sputum in considerable amounts. Heart disease will not give foul sputum. He has something more than disease of the heart and kidneys.

That statement of pyuria is very dubious Patients do not notice pyuria or hematuria. We cannot make a diagnosis of pyuria without a microscope.

NOTES ON THE PHYSICAL EXAMINATION

Such an amount of thoracic dullness in the absence of fever would be very improbable. I am doubtful about that. The rest of the chest shows râles such as would go with asthma, passive congestion, heart disease or nephritis. The striking thing is that there certainly is no evidence of fluid at the bases. There is no bronchial breathing. I do not believe that there is solidification of the lungs at the top. He has passive congestion and nothing else.

Right axis deviation means right ventricular preponderance. That cardiac examination is negative aside from that right axis deviation. Something had increased the work of the right ventricle. The lung condition, whatever that is, has thrown so much work on the right ventricle that hypertrophy and dilatation have occurred

The vessels of the fundi are always somewhat tortuous. I never saw straight vessels in the fundi.

Those are good kidneys. There is no evidence of nephritis.

The polycythemia probably is due to cyanosis.

The X-ray shows no evidence of lung abscess or bronchiectasis.

A systolic blood pressure of 60 is about as low as one can get it.

His dyspnea does not improve as his blood pressure goes up. His lungs must be responsible for the dyspnea.

DIFFERENTIAL DIAGNOSIS

As I said in the beginning, it ordinarily turns out to be true in our cases here that a man coming in for dyspnea has disease of the heart, the kidneys or both. I am convinced that he had no disease of the kidneys. He has disease of the heart, but not enough to explain his symptoms. We have to find disease in the lungs to account for the weakness of the heart and probably for most of the dyspnea he has. There is nothing to make us think of the rest of the body. Passive congestion of the liver and legs goes along with the weakness of the heart which I believe is present. He has hypertrophy and dilatation of the heart with no evidence of valve lesions.

The lungs are a puzzle. What can he have? (a) He cannot have *tuberculosis* in my opinion. They had many chances to look for tubercle bacilli and could not find them. He had very little fever. He is not emaciated; he is fairly well nourished. He has been sick too long for miliary tuberculosis. Our X-ray plate does not exclude miliary tuberculosis because it is not a good plate. But he has had his trouble pretty long for miliary tuberculosis. We can have subacute miliary tuberculosis lasting for weeks, but apparently this has lasted for months. I do not believe tuberculosis has anything to do with it. (b) *Bronchitis?* There is no doubt about it. But he must have had more than that. (c) Could he have *pneumonia?* There are no signs of it.

The trouble has lasted too long for that. (d) *Emphysema?* Yes, I am inclined to think of that in this case. Extreme cyanosis not accounted for otherwise often does go with emphysema. We need a cause for the circulatory trouble in the lungs. Emphysema does go with it. There was apparently rightsided preponderance shown in the electrocardiogram, which goes with some sort of obstruction of the lung. (e) *Chronic pneumonitis and bronchiectasis* we cannot exclude. I am inclined to think he has it. If we had a good X-ray we might be more sure of it. Foul sputum and bloody sputum go with bronchiectasis when we do not see any signs of abscess.

The best reasoning from the evidence here is that his lungs will show a chronic pneumonitis with bronchiectasis and possibly some emphysema. The heart will show hypertrophy and dilatation but nothing else. The rest of the organs will show passive congestion.

A STUDENT: Do you think this could be the so-called asthma dyspnea?

DR. CABOT: Asthma does cause dyspnea. Patients do die of asthma. Dr. Rackemann has seen several cases of asthma and death in the past few years. I do not know the signs well enough to exclude asthma. But he certainly has something besides. Asthma does not cause a big heart. It does not give you foul sputum. His dyspnea has been pretty continuous, although with exacerbations. Asthma ought to leave a person with less continuous dyspnea than this. Of course we cannot investigate the question of irritants. The fact that it comes predominantly in the winter is against asthma. There is a fairly good case against asthma, but I should have considered it further than I had.

A STUDENT: What was the attack January 9?

DR. CABOT: I think it was the same thing that he had been having. Why did it suddenly get worse? I do not know.

A STUDENT: Do you think that polycythemia might have caused the headaches?

DR. CABOT: Possibly. It certainly is a cause of headache and some passive congestion. But I do not think I have seen headache in secondary polycythemia.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic nephritis.
Bronchopneumonia.
Asthma.

DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic pneumonitis.
Bronchiectasis.
Possibly some emphysema.
Hypertrophy and dilatation of the heart.
Chronic passive congestion, general.

ANATOMIC DIAGNOSES

1. *Primary fatal lesion.*

Bronchiectasis.

2. *Secondary or terminal lesions.*

Emphysema.
Bronchopneumonia.
Hypertrophy of right ventricle.

DR. TRACY B. MALLORY: On opening the chest very voluminous lungs were found, almost meeting in the center over the heart. There was a slight amount of fluid in each chest, only about 200 cubic centimeters. There were old fibrous adhesions on the right. The trachea contained a moderate amount of blood tinged frothy fluid, definitely mucoid. As we went down the bronchial tract this became greater in amount, stickier and more purulent. The larger bronchi showed a reddish black discoloration of the mucosa. The smaller bronchi at the periphery of the lung were dilated diffusely throughout their extent, that is a tubular rather than a saccular type of bronchiectasis. Microscopic examination shows marked congestion, hyperemia of the mucous membrane of the bronchi, infiltration with plasma cells and also fairly numerous eosinophils, many of which show a round mononuclear nucleus. These are of rather common occurrence in bronchiectasis and asthma. The muscular layer did not show any definite hypertrophy as it ought to do in typical asthma. I should be inclined to class the case as one of chronic bronchitis with possibly a symptomatic asthma. The upper lobes of the lungs showed very marked and definite emphysema. Microscopic examination showed very early foci of bronchopneumonia.

As was predicted, the right heart was much hypertrophied. The wall of the left ventricle measured 8 millimeters in thickness, as against the normal of about 3. Virtually about half the total weight of the heart, as nearly as I could estimate, was supplied by the right ventricle.

The other organs showed a considerable degree of acute but very little chronic congestion. The text books on pathology always tell one that emphysema does not give chronic passive congestion of the liver. I have no explanation of that, but I have seen several examples where it was true. In this case there was a very slight degree of chronic congestion although a relatively marked acute congestion. The only possible explanation that I have is that when there is heart failure entirely on the right side of the heart it is perhaps too sudden and rapid to give the type of change in the liver that one gets in a mitral case, where the condition lasts over months, sometimes years. Have you any ideas about that, Dr. Cabot?

DR. CABOT: Not any.

DR. MALLORY: I think the fact is pretty well established. The German writers are particularly emphatic about it. The cases that I saw in Germany and the few cases I have seen here most of them have fitted very well.

DR. CABOT: Dr. Lord used to say of bronchi-

ectasis that it always was accompanied by a certain amount of chronic pneumonitis. Is that your experience?

DR. MALLORY: Not always. It usually is. I had a case yesterday in which Dr. Lord was forced to admit that it was not.

DR. CABOT: How was it in the case that we have been discussing?

DR. MALLORY: There was a moderate amount, fairly close to the bronchi, but a definite infiltration of the lung parenchyma for a few millimeters on each side of the bronchi.

DR. CABOT: How much did the heart weigh?

DR. MALLORY: 375 grams.

DR. CABOT: Was there anything to show why he had this attack at the end?

DR. MALLORY: Only the relatively large amount of secretion in the smaller bronchi. There was apparently more than he was able to cough up.

DR. CABOT: When a patient becomes so weak that he cannot cough he gets to a point where he drowns in his own secretions.

CASE 14142

OBSCURE BONE INFECTION ABOUT HIP JOINT

ORTHOPEDIC DEPARTMENT

An American schoolboy thirteen years old was referred from one of the State tuberculosis sanatoria December 3 complaining of a suprapubic mass of two months' duration.

A report from the sanatorium states that sixteen months before admission he fractured the right hip and pelvis. He wore a spica for seven months. At the end of this time union had apparently occurred. Two months later he was allowed to walk with crutches. The right leg had remained very weak. A tuberculin test was negative. He was however sent to the sanatorium because he was believed to have tuberculosis of the hip. Examination at the sanatorium showed shortening of the right leg. All motions in the leg were limited. The thigh was abducted 45°. X-ray showed an old destructive process of the right hip joint involving the ilium and the neck and head of the femur. There was considerable bone production. The patient was placed in a traction apparatus and got along comfortably for six weeks. Two months before admission he complained of severe pain in his right lower quadrant present during the day and disappearing during the evening. He said he had had similar but milder pains before. On examination a median suprapubic mass was found extending almost to the umbilicus. He continued to be comfortable, lost no weight, and maintained a hemoglobin of 65.

His family history is unimportant.

Clinical examination showed a fairly well developed, thin, almost emaciated boy. Skin unusually brown except for a triangular white area over the lower abdomen, the genitalia, the perineum and the sacrum posteriorly. Blood pressure 95/70. Considerable muscle atrophy of both thighs and lower legs. Right hip firmly ankylosed; active and passive motion impossible. Anterior-superior spine of right ilium was not so prominent as was the left. Over the anterior aspect of the right hip and in the right groin was a fullness not present on the left. In the lower midabdomen was a visible mass, smooth, very hard, not tender, rising as high as the umbilicus and extending from the lateral border of the left rectus to the right ilium, with which it seemed to be continuous. It was firmly fixed to the os pubis. On the right it rose as high as the iliac crest and was continuous with the fullness noticed over the right hip. Posteriorly there was fullness over the dorsum of the right ilium which was not felt over the corresponding bone on the left side. By rectum a mass could be felt firmly attached to the right side of the pelvis, of which it seemed to be a part. The finger in the rectum could not be extended beyond the midline toward the right side because of this obstructing mass. In no place was there any tenderness or other suggestion of inflammation. The rest of the examination was negative.

Before operation normal amount of urine when recorded, specific gravity 1.008 to 1.018, sediment, occasional leukocytes; blood, 9,400 leukocytes, 70 per cent. polymorphonuclears, hemoglobin 70 per cent., reds 4,256,000; Wassermann negative.

An X-ray film of the chest showed no abnormality. At examination with a barium enema the colon filled normally to and including the cecum. No filling defects were seen. Mobility of the colon could not be obtained entirely satisfactorily because of spasm of the abdomen, but the cecum appeared to be freely movable. There was no definite relation to the mass in the lower abdomen and the colon. A plate of the pelvis showed an extensive destruetive process involving the ilium, the hip joint, the sacro-iliac joint and the head of the femur. The femur on this side was smaller and less radiant than that on the opposite side. A cystogram showed the outline of the bladder well. It was considerably larger than normal and was displaced well to the left of the median line. (See Plate I.) "In view of the clinical findings and the appearance of the ilium above the hip joint the picture might best be explained as tumor, probably sarcoma of the ilium, plus a disorder of the hip which might be old tuberculosis or the destruction incident to a former complete separation of the femoral epiphysis."

Before operation temperature 98° to 100.3°, with daily afternoon rise, pulse 80 to 111, respirations normal.

Dr. Allison in consultation suggested biopsy and tissue examination.

A radiologist and a surgical consultant agreed in thinking that two processes were probably present.

December 9 biopsy was done. Under gas-ether a muscle splitting incision was made about the center of the mass and first the Mixter punch was introduced without getting what looked like satisfactory tissue. Then a section of the superficial part of the tumor was cut out. This allowed the finger to enter the tumor mass in various directions, apparently into necrotic inflammatory material. There was no free pus. A culture was taken from the center of the mass. Tissue was then removed from the depth of the wound. This also seemed like inflammatory material. The finger penetrated through to the iliac fossa and downward into the pelvis without any suggestion of anything other than inflammation. A pathological report of chronic inflammation was returned.

The patient felt fairly well after the operation. One-tenth milligram of tuberculin was given intradermally with no reaction. The incision became slightly septic, and cloudy serous fluid drained from two small sinuses. Under drainage the suprapubic mass seemed to grow smaller and less firm. By December 21 the temperature was flat. December 28 the old wound was reopened under gas and a cigarette wick and Dakin's tubes were inserted. By January 5 the drainage and Dakin's tubes were out. January 7 the sinuses were open and hot applications started. The mass seemed to be increasing rather than decreasing in size. Alpine lamp treatment was be-

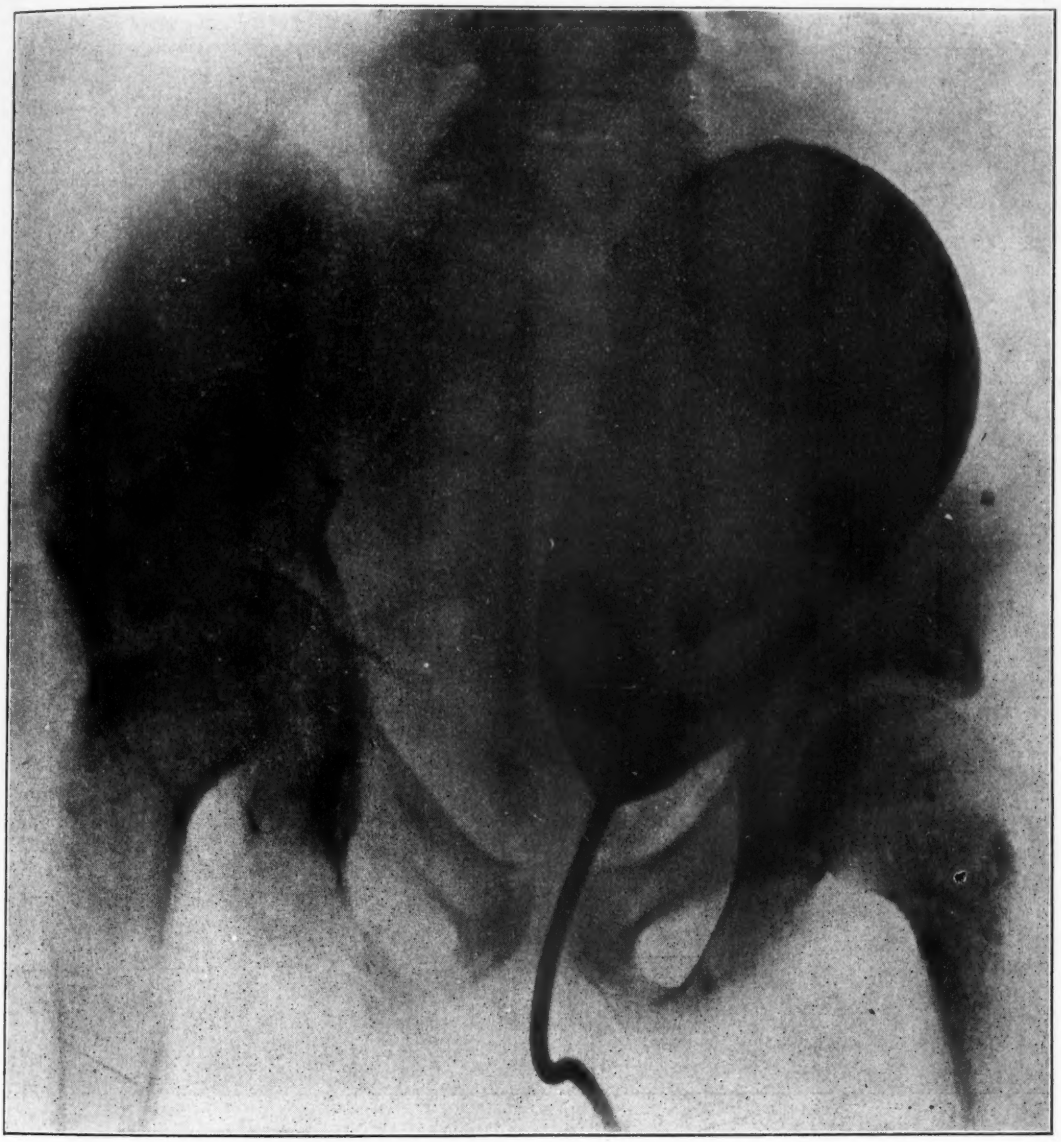


PLATE I. Taken at admission. Shows an extensive destructive process involving the right ilium, the hip joint, the sacroiliac joint and the head of the femur. The right femur is smaller and less radiant than the left. The bladder is considerably larger than normal and is displaced well to the left of the median line.

gun January 10 and continued until January 27, six treatments being given. January 13 the mass was found to have definitely increased in size in the past four days. Dakin's irrigations were given daily.

X-ray of the bones of the foot and ankle showed some atrophy. In the lower end of the tibia just above the epiphyseal line there was a faint circular ring-like shadow of slightly increased density both in the anteroposterior and the lateral views. The pelvic mass continued in the same condition.

The patient was transferred to the Orthopedic service. On examination the right hip presented a permanent flexion deformity of 10° as before, but was partially, not completely ankylosed, as it could be further flexed 20°. Rotation was nil. There was no power of abduction or adduction. There was moderate swelling of the right thigh and calf, half an inch to an inch, and some edema of the right scrotum. The right inguinal glands were enlarged. The spine and the other joints were negative.

January 25 operation was done. The patient did well after it. There was moderate drainage from the wound. The abdominal mass seemed to decrease in size. An X-ray film taken February 3 with sodium iodide solution injected into the bladder showed the displacement of the bladder somewhat less than at the last observation. Lipiodol was injected into the drainage sinus. X-ray showed the lipiodol filling a moderate sized abscess cavity. (See Plate II.) February 7 the patient was discharged back to the sanatorium.

PLATE II. Taken February 6, at discharge. Lipiodol has been injected into the drainage sinus, filling a moderate sized abdominal abscess cavity.

Discussion

BY NATHANIEL ALLISON, M.D.

When first examined in the hospital this patient presented a large pelvic tumor which could

be seen and palpated anteriorly. He was sent to the hospital with a diagnosis of sarcoma. The mass was located slightly to the right of midline and filled up the right lower quadrant and region mesial to the anterior-superior spine of the ilium. X-ray examination showed the bladder displaced definitely to the left side beyond the midline.

The above outline of the history gives clearly the physical findings. There was evident destruction of the right hip on which a diagnosis of tuberculosis had been made several years previous to his entrance at the hospital and for which lesion he had been treated by heliotherapy so that his skin was deep brown in color.

DIFFERENTIAL DIAGNOSIS

It seemed to the roentgenologist that the tumor mass was probably osteogenic sarcoma superimposed on an old tuberculous lesion of the hip. Several members of the surgical and orthopedic services respectively believed the whole process to be one of tuberculosis in which an extraordinary amount of proliferation of bone tissue had taken place. Biopsy performed at one time revealed only chronic inflammatory tissue. Cultures taken at this time were negative, showing no growth, and nothing on smear. X-ray examination of the chest revealed no evidence of metastases in the lungs.

After numerous examinations, biopsy, and discussions, the diagnosis on the tumor mass lay between a chronic tuberculous mass, osteogenic sarcoma of ilium, and osteomyelitis involving the ilium and femur.

An exploratory operation was performed, entering the pelvis from the side of the ilium just below the anterior-superior spine. On removing the portion of the ilium just above the acetabulum a large abscess cavity was opened, which on further inspection was found to communicate with the small sinus draining from the old biopsy wound in the abdominal wall. This tumor filled the entire pelvis mesial to the acetabulum and was a direct extension of a process involving the hip joint. Examination of tissue removed at this time showed no evidence of tuberculosis whatsoever in numerous sections. A guinea pig test was negative. Final diagnosis: osteomyelitis of upper end of femur and ilium.

This instance of bone disease is interesting from several points of view. In the first place, the patient was treated for tuberculosis of the hip when the disease was apparently not tuberculosis. In the second place, the tumor mass was thought to be osteogenic sarcoma, which it proved not to be. Finally, the diagnosis of osteomyelitis involving the upper end of the femur and ilium seems definitely proved, but the clinical history is not that of the ordinary case of pyogenic osteomyelitis. It may be assumed that the bacterial agency was of such low-grade virulence that the ordinary picture of acute illness was at no time present.

X-RAY INTERPRETATION DECEMBER 6

DIAGNOSIS

Osteomyelitis of upper end of femur and ilium.

In view of the clinical findings and the appearance of the ilium above the hip joint the picture might best be explained as tumor, probably sarcoma of the ilium, plus a disorder of the hip which might be old tuberculosis or the destruction incident to former complete separation of the femoral symphysis.

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RESPIRATORY DISEASE AMONG INDUSTRIAL WORKERS

THE United States Public Health Service has recently assisted in the analysis of the record of an electric light and power company in regard to diseases which cause time lost from work, and has published the result of its tabulations. More than one-half of the absences on account of sickness were found to be due to diseases of the respiratory tract—the ordinary cold, sore throat, tonsillitis, bronchitis, influenza or grippe and pneumonia. The record includes all absences lasting a day or longer over a ten-year period. No other disease group approached this one in importance.

Various employee benefit associations in the northern and eastern part of the country have records which duplicate these, respiratory diseases having caused 47 per cent. of all the cases of illness for which sick benefits were paid, from 1921-1926, by 35 different associations having a combined membership of nearly 100,000 persons. The electric company first mentioned showed that the average loss of time on account of sickness was approximately six days a year per individual, of which three days were due to respiratory disease. According to the record of the company, also, the common cold caused 70 per cent. of the absences due to respiratory diseases, occasioning the disability of 4 out of 10 men annually, and 7 out of 10 women.

Next in importance to the common cold came influenza or grippe, and the third group, as far as time lost was concerned, was that comprised of diseases of the pharynx and tonsils. The same experience was encountered by the sick-benefit associations.

The incidence of respiratory diseases, as might be expected, varied with the seasons, July being the healthiest month in this respect, and February marking the peak of incidence. The rate of respiratory disease was also found to vary widely in different types of industrial establishments, and in different industrial groups, communities and cities. A careful study as to the causes of these differences is needed, and several studies in this field are now being undertaken by the Service. One recently begun, is a study of the specific respiratory disease, lobar pneumonia.

It is a matter of great importance and a cause for congratulation that industrial organizations, research foundations, and the Public Health Service are taking up studies of these infections. Diseases which are responsible for practically half of the time lost from industry and which are in theory at least, preventable, deserve the careful consideration of medical science.

The Boston Medical Library and The Massachusetts Medical Society

A SPECIAL meeting of the Corporation of the Boston Medical Library was held at the Library on May 21st, called at the request of the Executive Committee to act upon the following vote and recommendation of the Executive Committee passed on May 7th.

VOTED: That the Executive Committee recommended to the Corporation of the Boston Medical Library that the Library start at an early date an active campaign for funds for its needs.

At this meeting of the members of the Library the following two votes were passed:

VOTED: That the recommendation of the Executive Committee be adopted and that authority be granted to this committee to institute a campaign for funds to meet the urgent need of the Library for increased space, and to provide quarters under one roof for the various medical and allied interests, approved by them, in Massachusetts.

VOTED: That the sentiment of this meeting of the Corporation is that a home should be pro-

vided for the Massachusetts Medical Society and that the Corporation will coöperate to that end.

H. BINNEY, *Secretary.*

In a later issue of the JOURNAL a more full report of the meeting will be given.

Contributions for the Home for The Massachusetts Medical Society

CONTRIBUTIONS for the proposed headquarters of the Massachusetts Medical Society have been very generous in some districts. Other districts have been slow to respond. This tardy response in some sections appears to have been due chiefly to misgivings as to any breach between the Society and the Boston Medical Library.

All grounds for this fear have been removed. Fellows of the Society at first lukewarm are now enthusiastically in favor of raising money for adequate quarters for both the Society and the Library.

The present need is to raise $125,000 for securing and maintaining headquarters for the Society. If this is secured the Library will be free to go ahead with its plans for betterment, relieved of the need of soliciting money for rooms not needed strictly for Library purposes. The Society meantime can at once secure adequate quarters for the period, necessarily several years, before the Library can expect to have completed its building program. It is the earnest wish of those in charge that each Fellow make his contribution to the Treasurer of the Society, Dr. Arthur K. Stone, of Framingham Centre, before the Annual Meeting.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

DOWLING, JOHN J. M.D. Harvard, 1894. Superintendent Boston City Hospital. His subject is: "Plans and Progress of the Boston City Hospital". Page 723. Address: Boston City Hospital.

ROBEY, WILLIAM H. A.B., M.D. Harvard, 1895. Assistant Professor of Medicine, Harvard University; Visiting Physician, Boston City Hospital; Consulting Physician, Milton Hospital; President, New England Heart Association; Vice-President, American Heart Association. His subject is: "The Effects of Tonsillectomy on the Attack of Acute Rheumatic Fever". Page 724. Address: 202 Commonwealth Avenue, Boston.

BINNEY, HORACE. A.B., M.D. Harvard, 1901. F.A.C.S. Surgeon-in-Chief, Boston City Hospital; Assistant Professor of Surgery, Tufts Medical School. His subject is: "Suppurative Diseases of the Lungs". Page 725. Address: 403 Beacon Street, Boston.

WEARN, JOSEPH T. B.S., M.D. Harvard, 1917. Assistant Professor of Medicine, Harvard Medical School; Associate Director of the Thorndike Memorial Research Laboratory. His subject is: "The Thebesian Vessels of the Heart and Their Relation to Angina Pectoris and Coronary Thrombosis". Page 726. Address: Boston City Hospital.

MASON, NATHANIEL R. A.B., M.D. Harvard, 1901. F.A.C.S. Chief of Staff, Gynecological and Obstetrical Service, Boston City Hospital; Instructor in Obstetrics and Gynecology, Harvard Medical School. His subject is: "Case of Malignant Disease of the Vulva". Page 727. Address: 483 Beacon Street, Boston.

YOUNG, EDWARD L., JR. M.D. Harvard, 1909. F.A.C.S. Assistant Visiting Surgeon, Massachusetts General Hospital. His subject is: "The End Results of Chronic Cholecystitis". Page 729. Address: 279 Clarendon Street, Boston.

MARGESON, REGINALD D. M.D. Tufts, 1915. F.A.C.S. Junior Visiting Surgeon for Gynaecology and Obstetrics, Boston City Hospital; Assistant in Anatomy, Harvard Medical School; Assistant in Gynaecology, Harvard Medical School. His subject is: "Toxemia in Pregnancy". Page 735. Address: 520 Commonwealth Avenue, Boston.

ROGERS, PHILIP M. M.D. For data see footnote on Page 740. His subject is: "A Study of the Blood Monocytes in Children With Tuberculosis". Page 740. Address: Seattle City Hospital, Seattle, Washington.

DAVIS, DAVID. B.S., M.D. Cornell, 1925. Interne, Boston City Hospital, November, 1925-July, 1927. First Medical Service; In Charge of Cardiological Clinic, Boston Dispensary. His subject is: "The Determination of the Blood Sedimentation Time with Capillary Blood". Page 750. Address: 485 Commonwealth Avenue, Boston.

WESSELHOEFT, CONRAD. M.D. Harvard, 1911. Physician, Haynes Memorial Hospital; Lecturer in Theory and Practice, Boston University School of Medicine. Address: 366 Commonwealth Avenue, Boston. Associated with him is

GORDON, FAITH F. S.B., M.D. Boston University, 1923. Assistant to the Medical Director at Smith College. Address: 65 New South Street, Northampton, Mass. Their subject is: "Report of Convalescent Measles Serum Administration in Cases Exposed to Measles During the Course of Scarlet Fever and Diphtheria". Page 752.

DALTON, CHARLES F. M.D. University of Vermont, 1903. Secretary and Executive Officer, Vermont Department of Public Health since 1912; Professor of Hygiene and Preventive Medicine, University of Vermont, College of Medicine; Formerly President, Conference of

State and Provincial Health Authorities of North America. Vice-President, Vermont State Medical Society. His subject is: "Poliomyelitis Work in Vermont". Page 755. Address: Department of Public Health, Burlington, Vermont.

McFEE, WILLIAM D. M.D. University of Vermont, 1897. Chief of Staff, Gale Hospital, Haverhill, Director of Physio-Therapy; Past President and Present Trustee, American Electrotherapeutic Association; Past Director of Physiotherapy Department of Walter Reed Hospital; Major in Medical Reserve Corps, U. S. Army. His subject is: "Electro-Surgery". Page 761. Address: 53 White Street, Haverhill, Mass.

The Massachusetts Medical Society

SECTION OF OBSTETRICS AND GYNECOLOGY

Foster S. Kellogg, M.D., *Chairman* — Frederick L. Good, M.D., *Secretary*

Frederick J. Lynch, M.D., *Clerk*

What Are the Uses of the Obstetric Bag?

The treatment of certain types of first stage delay, the control of hemorrhage during labor, and the induction of labor represent the indications for the use of the bag.

When first stage delay is entirely a matter of slow dilatation, due perhaps to an absence of forewaters, to a physiologically or pathologically "rigid" cervix, or to a primary inertia, the bag becomes a valuable treatment measure. A reasonably prompt completion of dilatation can be anticipated, provided always that the definite contraindication of a "neglected" labor is recognized. In the case with imminent, or definitely established irregular contractions (contraction rings) the bag *should not be used.* If a bag is to be used in a long drawn out first stage case, especially a "dry" labor, it must be inserted in sufficient time to allow for full dilatation before the anticipated tonic uterus develops.

In the partial previas which begin to bleed after some dilatation has occurred, the bag, placed within the lower segment so as to compress the placenta, will control bleeding until dilatation is completed, with extraction then relatively easy and safe; a high percentage of favorable results can be anticipated in this type of case.

In the complete previas when section is not available, the bag represents an emergency treatment safer than an accouchement forcé in most cases. The partial separation of a normally implanted placenta should be sharply differentiated from the previas as far as bag treatment is concerned. The bag may be used in such a case, (with slight bleeding) to secure a reasonable degree of dilatation before extraction is attempted, but the conversion of an open into a concealed hemorrhage may engender a false sense of security.

When induction of labor is indicated, four methods are available for its accomplishment; one of these is the bag. The "drug" method (castor oil and quinin) is unreliable and usually efficacious only if spontaneous labor is imminent. Artificial rupture of the membranes is efficacious, within forty-eight hours ordinarily, but carrying with it such difficulties as may be anticipated in certain cases from a "dry" labor. The large catheter or rectal tube with cervical pack is not always positive in action but the labor so induced usually follows a normal course, other things being equal. With the bag, induction is usually prompt; a "stormy" first stage is apt to result, a definite disadvantage in primiparous patients. While in some cases a bag may remain in situ for forty-eight hours with no evidences of beginning labor, generally speaking it is the most dependable means at our disposal for quickly inducing labor. When the element of time is important it is the method of choice. It may with advantage be combined with the drug method.

The successful use of a bag in any case depends on the recognition of certain principles: most important, the size of a bag employed in a given case should always *be as large as the baby's head.* The bag should not be removed ordinarily, before its spontaneous delivery, its passage over the perineum being hastened by anesthesia and traction. In the cases of spontaneous delivery of the bag, birth usually follows rapidly, but if such is not the case one should not wait longer than fifteen minutes before the extraction.

With partial dilatation already present a bag may be introduced without anesthesia, but unless the patient is exceptionally self controlled, anesthesia (gas oxygen) aids materially, especially in the maintenance of asepsis. The installation in the vagina of two drachms of a four per cent. mercurochrome solution previous to insertion is advised.

The perineum is retracted with a weighted speculum, the cervix grasped and steadied, with vulsellum forceps. The capacity of the bag to be used is then measured by noting carefully the number of syringefuls of sterile water it contains when firmly distended. If the os does not admit a finger easily it is dilated to that size with a uterine dilator. The bag is then folded over once (not rolled) and grasped with a long heavy curved broad ligament clamp and inserted into the lower segment until only the *stem is visible* outside the cervix. Its introduction through a tight cervix is greatly facilitated by free lubrication with sterile liquid soap. It should be inserted to one side of the presenting part leaving the displacement of the latter to occur as the bag is filled. When in place, the clamp is removed, a finger in the cervical canal preventing dislodgement of the bag before its distention is complete; this latter is secured by

an assistant who injects the previously determined number of syringefuls of water. The stem is then tied with umbilical tape, and retied folded, until careful inspection gives assurance of no leaking. A three pound pull is provided by weights at the foot of the bed. It should be noted that a three pound weight so arranged does not necessarily exert a three pound pull. If the bag is to be placed within the amniotic sac the membranes are ruptured previous to its insertion.

When the bag itself, above the stem, appears at the introitus, dilatation of the os is nearly complete; further progress is hastened by traction with each contraction, grasping the bag itself just above the stem, the patient having obstetric anesthesia. Securing, with the bag, complete dilatation of the perineum as well as the cervix, materially aids subsequent procedure.

Questions of a similar nature to the foregoing will be discussed in the JOURNAL each week. They may be addressed to the Clerk of the Committee, in care of the JOURNAL and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

BOSTON MEDICAL LIBRARY

SURGICAL PATHOLOGY

THE dissociation of the study of clinical medicine and pathology has been one of the tendencies of recent years. Pathology in the schools has been taught as a second-year subject as a rule and only sporadically in any school, and not even in that way in many has the knowledge there acquired been carried over into the clinical years in any purposeful fashion. If this is true for the internist and general practitioner it is infinitely more true for the surgeon whose opportunities for studying gross pathology in the living are far more extensive than can possibly be the case with the medical practitioner at best, unless he avail himself far more generally than he does of post mortem material. A considerable portion of any process which we term pathological, when viewed from the standpoint of the microscope, is reparative and represents the efforts of the organism to overcome a hostile agency.

The surgeon can form no conception of this from anything he may see at operation unless he trains himself by the study of every gross specimen he sees and pursues this study even farther with the microscope. One has sometimes had to question why surgical situations which, measured by prevailing standards should be dealt with by operative measures, appear to recover spontaneously. Is it due to mistaken diagnosis or may it not be due to the fact that refusal of the patient to submit to surgery gives time for the reparative forces of the body to bring about a cure? If the latter should really be the answer, would not a closer study of the pathology when practiced upon a large number of such cases give information which might be clinically useful, thereby saving certain patients from the risks and annoyances of surgery?

The remarkable restorations which are occasionally observed after extensive destruction of bone, even involving considerable correction of resultant deformity strengthen one's belief that we have yet much to learn in respect to nature's recuperative powers and the laws which govern them.

A case of constipation comes to the doctor. He is familiar with a number of things which he knows will open the bowel. How often he prescribes the first one that he recalls without any serious consideration of that patient's particular needs! A surgical situation presents itself, the knife may cure it and so that kind of treatment is prescribed after such interrogation and examination has been undertaken as tends to establish the diagnosis but not necessarily give much information as to where that particular case should be classed on the basis of the natural history of that disease.

A great many conditions in healthy young children, as for example pronated feet, mild degrees of bow legs or knock knees and many others are brought to the physician by anxious parents, that merely represent a phase common to the development of the child. These conditions correct themselves and require no treatment. The ruthless removal of structures, that it is fair to assume would never have been given us had not their presence held the promise of greater benefit than menace is a matter that deserves more thoughtful consideration than in all probability it commonly receives. A more serious study of the surgical pathology of these structures might lead to a more intelligent application of surgery for the treatment of the lesions to which they are subject.

There is grave danger in too great a refinement of operative technique unless there is developed along with it an equally keen appreciation of the significance of pathological changes with their concomitant reparative processes. So little risk attends most procedures in the hands of the technically skillful operator that it is not difficult to obtain permission for surgery, but it is not by such practice that the knowledge of surgical disease is to be advanced. Hippocrates has somewhere said in effect that the physician must learn from the past if he is to do himself and his patients the greatest good. Much has been written on this subject, some of which will be displayed in Holmes Hall the week of May 28th.

MISCELLANY

REPORT OF MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

Applicants Registered—Examination of March, 1928

Abbott, Alden Quimby, 85 Otis Street, Cambridge, Mass.
Andrews, Katherine Sarah, 110 South 21st Street, Philadelphia, Pa.
Bloom, Henry Rostler, State Hospital, Middletown, N. Y.
Bourcier, Albert Ubald, Northampton State Hospital, Northampton, Mass.
Bresnick, Nathan, 237 Chambers Street, Boston, Mass.
Ching, Sarah Mu Jin, Worcester State Hospital, Worcester, Mass.
Clapp, Roland Davis, 15 Monument Street, New Bedford, Mass.
Clifford, Stewart Hilton, 274 Brookline Avenue, S. 15, Boston, Mass.
Cohen, Benjamin Myron, 1493 Cambridge Street, Cambridge Mass.
Corrigan, Sylvester Edward, St. Luke's Hospital, New Bedford, Mass.
Cox, George Everett, 660 Maple Street, Manchester, N. H.
Cragg, Grace Teresa, Lock Box A, Harding, Mass.
DeAsis, Cesareo, Worcester State Hospital, Worcester, Mass.
Driscoll, Daniel Timothy, 465 Highland Avenue, Malden, Mass.
Dumouchel, Antoine, Rutland State Sanatorium, Rutland, Mass.
Farrall, Byron Huntley, Box 412, Groton, Mass.
Fleming, Francis James, Box 8, Waverley, Mass.
Forget, Ulysses, 72 Child Street, Warren, R. I.
Gerrish, Barney, U. S. Marine Hospital, Chelsea, Mass.
Grandfield, Robert Francis, 392 Marlborough Street, Boston, Mass.
Grinold, John Joseph, 59 West Main Street, Meriden, Conn.
Haubrich, Bernard Page, Springfield Hospital, Springfield, Mass.
Hoyt, Lyman Howard, Peter Bent Brigham Hospital, Boston, Mass.
Johnson, Harry Taylor, 64 Cherry Street, Waltham, Mass.
Koulack, Isidore, Lynn Hospital, Lynn, Mass.
McGovern, Thomas James, Norfolk County Hospital, South Braintree, Mass.
Moss, William Lorenzo, Harvard Medical School, Boston, Mass.
Pierce, Everett Lyman, 179 Bay Street, Springfield, Mass.
Reid, Thomas Francis, 108 Middlesex Street, North Andover, Mass.
Ronka, Ensio Karl Frederick, 82 East Concord Street, Boston, Mass.
Ross, James Gordon, 41 Hayman Court Apts., London, Ontario.
Sherman, Sol, 397 Pearl Street, New York City, N. Y.
Sullivan, Daniel Francis, Jr., 186 Fern Street, Hartford, Conn.
Tauro, Antonio Luigi, 11 Bedford Street, Lynn, Mass.
Tauro, Emily Cooper, 11 Bedford Street, Lynn, Mass.
Walter, George, 58 Anderson Street, Boston, Mass.
Wason, Isabel Mary, 147 Cottage Street, New Bedford, Mass.
Whitehorn, John Clare, McLean Hospital, Waverley, Mass.
Wilder, Theodore Stanley, 300 Longwood Avenue, Boston, Mass.

Endorsement of National Board Registration

Burrage, Walter Swan, 182 Walnut Street, Brookline, Mass.
Collins, Wylie Louis, Boston Lying-in Hospital, Boston, Mass.
Doolittle, Lawrence Howard, Massachusetts Homoeopathic Hospital, Boston, Mass.
Ellis, Laurence Brewster, 1175 Centre Street, Newton Centre, Mass.
Gallup, Henry Ezra, 300 Longwood Avenue, Boston, Mass.
Gildea, Edwin Francis, Boston City Hospital, Boston, Mass.
Kendrick, Doris, 177 Bedford Street, Lexington, Massachusetts.
Weiss, Peter Francis, 36 Perkins Street, Jamaica Plain, Mass.

Classification of Graduates of Medical Schools

Name of School	Registered	Date Grad.	Rejected	Date Grad.
Middlesex	1	1923	1	1922
	1	1926	2	1923
			2	1925
			1	1926
Kansas City University of Physicians and Surgeons			1	1926
			2	1927
St. Louis College of Physicians and Surgeons			1	1923
Massachusetts College of Osteopathy	1	1922	1	1923
	1	1926	3	1925
	1	1927	2	1926
			5	1927
Kirksville College of Osteopathy and Surgery	1	1926	1	1921
			1	1925
			1	1926
			1	1927
			1	1928
Des Moines Still College of Osteopathy			1	1927
College of Physicians and Surgeons, Boston	1	1926	2	1927
Chicago Medical College			1	1925
Philadelphia College of Osteopathy	1	1927	1	1927
University of Montreal	3	1927	1	1921
			2	1922
			1	1925
University of Combra			1	1927
Chicago College of Osteopathy	1	1927	1	1927
Tufts	4	1927		
Boston University	1	1925	1	1927
	1	1926		
	5	1927		

University of Warsaw (Detected cribbing and dismissed from the examinations)	1	1926
Royal University of Naples	1	1923
University of Maryland	1	1910
McGill University	1	1927
University of Toronto	1	1926
University of Vermont	1	1924
Woman's Medical School, Pennslyvania	1	1921
Johns Hopkins	1	1905
	1	1917
University of Pennsylvania	1	1924
Harvard Medical	1	1921
	1	1925
	1	1928
University of Western Ontario	1	1917
Western Reserve	1	1924
St. Louis University	1	1924
Dalhousie University	1	1922
State University, Iowa	1	1925

ENDORSEMENT OF NATIONAL BOARD REGISTRATION

Harvard Medical	1	1924
	1	1925
	4	1926
University of Michigan	1	1926
Boston University School of Medicine	1	1926

MASSACHUSETTS LEGISLATIVE NOTES

House 1300—provides for the disposal of sewage of certain property of the Department of Mental Diseases in Waltham, Lexington and Belmont, and for the disposal of sewage of certain areas in Waltham, Lexington and Watertown which may be combined therewith.

House 1304—is designed to provide for the care and treatment of children predisposed or susceptible to tuberculosis. This is an amendment to Chapter 111 of the General Laws. The text of the bill reads: "The County commissioners of any County having a tuberculosis hospital established under sections seventy-eight to ninety, inclusive, may provide, with the approval of the department, proper and necessary buildings and other equipment for a preventorium for the treatment of children predisposed or susceptible to tuberculosis".

House 1310—is an act providing for temporary care and treatment of adult residents of certain counties suffering from pulmonary tuberculosis. The especial feature of this bill is that the Department of Public Health may arrange for the admission to and for the care and treatment of persons suffering from pulmonary tuberculosis who are residents of any of the cities or towns composing the territory of the Worcester County or Midldesex County Tuberculosis Hospital District or of the tuberculosis hospital district comprising Chelsea, Revere and Winthrop in approved institutions.

House 1314—is an act authorizing the County of Middlesex to raise and expend money for the purpose of providing a tuberculosis hospital for the Middlesex County Tuberculosis Hospital District.

House 1315—is an act authorizing the County of Worcester to raise and expend money for the purpose of providing a tuberculosis hospital for the Worcester County Tuberculosis Hospital District.

RECENT DEATHS

BRIDGWOOD and PETERSON — The JOURNAL is pained to record the death by drowning of two of its valued Fellows from Brockton in Moosehead Lake, Maine, Sunday, May 13, 1928. Dr. David Bridgwood, a young eye, ear, nose and throat specialist, a member of the staff of the Brockton Hospital, and Dr. Arthur Fredolf Peterson, a general practitioner who had been city physician in 1923, went to Moosehead Lake on a fishing expedition with seven other prominent citizens of Brockton. The motorboat in which they were traveling ran into a sunken log, the boat was upset, and all but one of its occupants were drowned.

Dr. Bridgwood, who was born in 1894, was a graduate of the Tufts College Medical School in 1917. He was a member of the Commercial Club, Brockton Elks, and Knights of Pythias, and was a thirty-second degree Mason. He was unmarried.

Dr. Peterson was born in 1887 and was a graduate of the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1916. He settled in Brockton and joined the Massachusetts Medical Society in 1919. He is survived by his widow and two sons.

CORRESPONDENCE

PEPTIC ULCER

Editor of the NEW ENGLAND JOURNAL OF MEDICINE.

Dear Sir:

Dr. Reginald Fitz asks in your issue of May 3rd,—"What Would You Do If You Had a Peptic Ulcer?" A physician who is a victim of a malady is apt to acquire interest in it and perhaps some knowledge of how to deal with it. Hyde Salter wrote on Asthma, Balfe on Diabetes, Morrill Wyman on Autumnal Catarrh, etc., etc. Possibly the experience of a medico, who as a sufferer and who saw many cases in hospital and private practice, may be of interest.

A doctor in his fourth decade, perhaps its latter half, began to have indigestion off and on. At forty he had copious bleeding up and down, and underwent the course of treatment which he usually carried out at that time—rest, starvation, and rectal feeding for at least a fortnight. If the rectum be coöperative this treatment may be prolonged to thirty or more days. The principle underlying it seems sound, the maximum of rest, and counts in the results of operative treatment.

Bleeding has never recurred; but symptoms, persistent though varying in degree, continued until the last diseased tooth was removed about two years ago. Since then there have been no symptoms. Meat and salt were much restricted in the diet, which was otherwise guided by experience. Milk between meals was helpful. Bismuth, a teaspoonful before meals, was taken off and on. Soda was taken freely for years, a teaspoonful, more or less, two to five or six times a day. The amount was limited only by that needed for relief. An occasional hypodermic of morphia was comforting and would have been taken

oftener but for the fear of dependency and increased dose. Once the stomach was washed and the procedure was so unpleasant that nothing short of dire necessity would have brought consent to repetition. Active work was carried on and regarded as salvation. Work distracts the mind as does smelling asafetida that of the balky horse. Pyloric spasm was not infrequent; but of such short duration that direct treatment for it did not seem worth while.

Operation was of course considered, but foregone mainly for the reason that the subject could never see how the cause of the disease—still obscure, is it not?—could be removed by the knife. There was no evidence of pyloric constriction.

The reporter, fully recognizing that he is a back number, ventures to sum up as follows:

Operation, formerly overdone, seems to be growing less frequent, and is probably falling into its proper place. Over-emphasis is laid on the X-ray, the possible misinterpretation of which is a factor not to be slighted. Symptoms are usually diagnostic. Time does not press as in perforation. Experimental treatment, seldom prolonged, is a diagnostic aid and often brings sufficient relief. The X-ray, expensive in both money and time, can be held in reserve, and should not be regarded as always revealing the absolute truth. There is nothing for which we are consulted, save the neuroses, in which painstaking individualization is more loudly called for than in the management of peptic ulcer. If, as Kipling I think tells us, "a manhole cover in anger is ten times worse than Hell", routine in medical practice is twenty or more times worse. Routine is for those without brains or for those who do not use them. Rules are for the unthinking. The thinking man knows but does not hesitate to break them.

The sin of egotism in this letter, which, in the main, agrees with Dr. Fitz's comprehensive statement, may, it is hoped, be not unpardonable. Somebody may derive comfort from this evidence that a man may tolerate a peptic ulcer and hyperacidity for forty years, lead an active life, and in his ninth decade be able to play two full rounds of golf in a day if he wants to, without ever having been operated on or X-rayed.

F. C. S.

APPOINTMENT OF DR. CARL H. ERNLUND

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

May 17, 1928.

Editor, NEW ENGLAND JOURNAL OF MEDICINE:

May I announce through your columns the appointment of Dr. Carl H. Ernlund as Assistant Visiting Laryngologist at the State Cancer Hospital at Pondville. As in the last analysis the quality of the service given there depends upon the quality of our visiting staff, we are certainly fortunate in being able to continue the standard already established by obtaining Dr. Ernlund's services.

Yours truly.

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

NEWS ITEMS

A CASE OF SMALLPOX IN MASSACHUSETTS—The fourth case of smallpox in Massachusetts thus far reported in 1928 has been found in Greenfield.

The patient's brother who lives in Connecticut visited his relatives in Greenfield April 26, and after his return home was found to have the disease.

Connecticut has been afflicted with over one hundred cases.

As usual neglect of vaccination is responsible for the development of smallpox.

NEW HAMPSHIRE MEDICAL SOCIETY—The following officers were elected at the Annual Meeting of the New Hampshire Medical Society held May 16: Dr. Joseph J. Cobb of Berlin, President; Dr. H. O. Smith of Hudson, Vice-President; Dr. D. E. Sullivan of Concord, Secretary-Treasurer. Dr. Clifton S. Abbott was named as councillor for Belknap County and Dr. H. T. Downing for Grafton County.

NOMINATION OF DR. J. J. GOODWIN—Dr. J. J. Goodwin of Clinton was nominated by Governor Fuller as Medical Examiner of Fourth Worcester District. The nomination was confirmed May 16.

NOTICES

ANNOUNCEMENT

Dr. Arthur Nicholson Broughton announces the removal of his office to 270 Commonwealth Avenue, Boston.

CORRECTION

The degrees of Dr. Meyer Golob which were published in our JOURNAL of May 3, should have read, Ph.G., M.D., instead of Ph.D., M.D.

AN ANNOUNCEMENT WITH RESPECT TO A CLASSIFICATION OF WORKMEN'S COMPENSATION CASES

To the physicians of Lawrence, Methuen, Andover and North Andover, and other physicians using the Lawrence General Hospital at Lawrence, Mass.:

It is a pleasure to announce that the management of this Hospital, the largest hospital located in the north half of Essex County, has voted to classify Workmen's Compensation cases as private or semi-private, and are planning to arrange for semi-private rooms for their reception.

The family physician, or the physician in attendance upon the case, will be permitted to make the usual proper charge, whether he be a member of the Medical Staff or not, or whether he be on active Staff Service at the time or not.

This policy is in accord with the usual fair and honorable methods which this Hospital has always maintained towards the community and the medical profession.

REPORTS AND NOTICES OF MEETINGS

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

At the annual meeting of the Middlesex East District Medical Society held May 9,.1928, it was moved

and voted unanimously that the Middlesex East District Society record itself as in favor of a proper remuneration for all physicians taking care of any type of accident case covered by insurance and of a per capita charge by hospitals, and that the Councillors be instructed to support any such measure as may be introduced in the Council.

THE NEW ENGLAND HEART ASSOCIATION

The New England Heart Association held its annual meeting at the Robert B. Brigham Hospital, May 17, 1928.

Dr. William H. Robey was reëlected President. The other officers are: Vice-president, Miss Mabel Wilson; Treasurer, C. E. Cotting; Secretary, Dr. Paul B. Emerson; Chairman of the Executive Committee, Dr. Saumel A. Levine.

Dr. Hyman Green was elected to membership on the Board of Governors.

AMERICAN ASSOCIATION FOR THE STUDY OF FEEBLEMINDED

The American Association for the Study of the Feebleminded will hold its annual meeting in Atlantic City, May 31st to June 2nd inclusive, with headquarters at Haddon Hall. The meeting this year has been designed to emphasize numerous practical aspects of the problem concerning the feebleminded, and speakers of national repute will present papers on a variety of these aspects. During the three-day session at Atlantic City, the following phases of mental deficiency will be discussed—the sociological aspects, pathological aspects, psychological aspects, administrative aspects of institutions for the care and training of mental defectives, and the delinquency aspect.

Officers of the Association are as follows: President, Edward R. Johnstone, who is the Director of the Training School at Vineland, N. J.; Vice-President, George E. McPherson, M.D., who is Superintendent, The Belchertown State School, at Belchertown, Mass.; Secretary-Treasurer, Howard W. Potter, M.D., Clinical Director of Letchworth Village at Thiells, N. Y.

Physicians, social workers, psychologists, nurses and others interested in problems associated with the care and training of the feebleminded are cordially invited to attend this meeting.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The annual meeting of the American Association for the Study of Goiter will be held in Denver, Colorado, June 18, 19, and 20, 1928, Headquarters: Cosmopolitan Hotel; Scientific Sessions, Medical Hall, 1620 Court Place.

The programme follows:

First Day—Monday, June 18

MORNING

8:00—Diagnostic Clinic: Denver General Hospital, 250 West Eighth Avenue at Cherokee Street. Drs. H. S. Plummer and S. F. Haines, Rochester, Minnesota.

10:00—Diagnostic Clinic: Colorado General Hospital, 4200 East Ninth Avenue. Dr. William D. Haggard, Nashville, Tennessee.

AFTERNOON

Medical Hall, 1620 Court Place

1:20—Address of Welcome—Hon. B. F. Stapleton, Mayor of Denver: "The Keys to the City."

1:40—Address of Welcome—Dr. James J. Waring, President, Medical Society of the City and County of Denver: "Medical Progress by Association."

2:00—Dr. Robert Olesen, Representing United States Public Health Service: "What Shall Be Done About Goiter Prophylaxis?"

2:20—Dr. Ralph Richards, Salt Lake City, Utah: "Utah Goiter Survey, Including Examination of 110,000 Children."

2:40—Dr. H. D. Kitchen, Representing Manitoba Health Department: "Adolescent Goiter."

3:00—Major F. P. Robeson, U. S. A., Fitzsimons Hospital, Denver, Colorado: "Trophisms of Endocrinological Imbalance."

3:20—Dr. J. H. Hutton, Chicago, Illinois: "Relation of Goiter to Other Endocrine Glands."

3:40—Dr. J. C. Moore, Seattle, Washington: "Endemic Goiter and Cretinism." (With de Quervain Film.)

Second Day—Tuesday, June 19

MORNING

8:00—Operative Clinics:

At the several Denver Hospitals. Cards of admission on application at the Medical Hall, 1620 Court Place, and at Association Headquarters, Cosmopolitan Hotel.

AFTERNOON

Medical Hall, 1620 Court Place

1:00—Address—Professor B. Breitner, von Eiselberg Clinic, Vienna, Austria: "The Iodine Question in Animal Experiments."

2:00—Dr. W. Blair Mosser, University of Pennsylvania, Thyroid Clinic, Philadelphia, Pennsylvania: "The Effect of Iodine on the Thyroid Gland—An Experimental Study."

2:20—Drs. W. H. Cole, N. A. Womack and S. M. Gray, Washington University, St. Louis, Missouri: "The Thyroid in Systemic Infections; Pathological Changes in Animal and Human Glands."

2:40—Dr. Frost C. Buchtel, Denver, Colorado: "Diagnosis of Adenoma of the Thyroid with Hyperthyroidism."

3:00—Dr. Henry S. Plummer, Mayo Clinic, Rochester, Minnesota: "Adenomatous Goiter."

3:20—Dr. Arthur E. Hertzler, Halstead, Kansas: "The Pathology of the Mixed Tumors of the Thyroid Gland."

3:40—Dr. W. M. Simpson, Dayton, Ohio: "Malignant Diseases of the Thyroid Gland."

4:00—Dr. W. N. Gillette, Toledo, Ohio: "The Surgical Pathology of the Thyroid Gland."

7:30—*Banquet at the Denver Club.

*Everyone is urgently requested to obtain tickets early. In addition to the repast and speeches, an uncensored movie film will be shown and a report of the Berne Conference made. Ladies invited.

Third Day—Wednesday, June 20

MORNING

Medical Hall, 1620 Court Place

8:00—Dr. J. L. DeCourcy, DeCourcy Clinic, Cincinnati, Ohio: "Toxic Psychosis and Goiter."

8:20—Dr. Allen Graham, Lakeside Hospital Clinic, Cleveland, Ohio: "Dysthyroidism."

8:40—Dr. J. K. McGregor, McGregor-Mowbray Clinic, Hamilton, Ontario, Canada: "The Atypical Thyroid."

9:00—Dr. H. M. Clute, Lahey Clinic, Boston, Massachusetts: "The Unusual Phases of Thyroid Disease."

9:20—Dr. Arnold Jackson, Jackson Clinic, Madison, Wisconsin: "The Use of Iodine in Hyperthyroidism."

9:40—Dr. J. Tate Mason, Seattle, Washington: "Pre-operative Treatment of Exophthalmic Goiter."

10:00—Dr. Thomas J. Gallaher, Denver, Colorado: "Ill Effects of Injudicious Use of Iodine as seen by the Otolaryngologist."

10:20—Dr. C. F. Kemper, Denver, Colorado: "Injuries to the Parathyroids and Subsequent Management."

10:40—Dr. B. T. King, Seattle, Washington: "An Analysis of 1,500 Goiter Histories and Clinical Notes."

11:00—Dr. Nelson M. Percy, Chicago, Illinois: "How to Reduce the Mortality in Thyroid Surgery."

AFTERNOON

1:00—Address—Professor Albert Kocher, Berne, Switzerland: "Pre- and Post-operative Treatment of Goiter."

2:00—Drs. Willard O. and P. K. Thompson, Massachusetts General Hospital Thyroid Clinic, Boston, Massachusetts: "The Significance of Low Metabolism Following Thyrotoxicosis."

2:20—Dr. J. DeJ. Pemberton, Mayo Clinic, Rochester, Minnesota: "Indications for the Stage-operation in Diseases of the Thyroid."

2:40—Dr. J. Earl Else, Else Dudman Nelson Clinic, Portland, Oregon: "The Treatment of the Desperate Goiter Patient."

3:00—Drs. S. F. Haines and W. M. Boothby, Mayo Clinic, Rochester, Minnesota: "The Value of Oxygen Treatment After Thyroidectomy."

4:00—Circle Motor Trip through the Denver Mountain Parks.

6:00—Supper at the Denver Motor Club House, Bear Creek Canon, on return part of Motor Trip.

THE TRUDEAU SOCIETY

The next meeting of the Trudeau Society of Boston will be held on Monday evening, June 4, 1928, at 8:15 P. M., in John Ware Hall, Boston Medical Library, 8 The Fenway, Boston.

The speaker will be Dr. Evarts A. Graham of St. Louis; subject: "Remarks on Pulmonary Suppuration."

Physicians, medical students and nurses are cordially invited to attend this meeting.

RANDALL CLIFFORD, *Secretary.*

BOSTON DISPENSARY

The June meeting of the Clinical Staff of the Boston Dispensary will be held at 25 Bennet Street on Thursday evening, June 7th, at 8:00 o'clock.

The following papers will be presented by members of the Division of Research.

1. "A Study of Bleeding and Clotting Time Before and After Tonsillectomy." H. J. Inglis, M.D.

2. "The Diagnostic Value of Sugar Tests in Diabetes. A Preliminary Report." James H. Townsend, M.D.

3. "The Diagnosis of Unilateral Diseases of the Kidney by Functional Tests." Harold T. Chamberlin, M.D., Joseph H. Pratt, M.D.

4. "A Comparison of the Diagnostic Value of Functional Tests of the Kidney." Louis H. Kramer, M.D., David Davis, M.D.

All physicians are cordially invited to attend.

MAYNARD LADD, M.D., *President.*
JOSEPH J. SKIRBALL, M.D., *Secretary.*

SOCIETY MEETINGS

May 31, June 1-2—American Society for the Study of the Feebleminded. Detailed notice appears on page 781.

June 4—The Trudeau Society. Detailed notice appears elsewhere on this page.

June 7—Boston Dispensary. Complete notice appears elsewhere on this page.

June 18-20—Meeting of the American Association for the Study of Goiter. See page 425, issue of April 12, for complete notice.

June 18-22—Convention of the Catholic Hospital Association. Complete notice appears on page 1597, issue of February 16.

December 3-7—Radiological Society Convention. Detailed notice appears on page 712, issue of May 17.

BOOK REVIEWS

Gynecology For Nurses, by HARRY STURGEON CROSSEN, M.D., F.A.C.S., St. Louis. The C. V. Mosby Company, 1927.

This admirable textbook of gynecological nursing represents the standard methods and technic of the Barnes Hospital and the Washington University Dispensary at St. Louis. The first part presents a survey of pelvic anatomy, physiology and pathology and of the methods used in gynecologic examination, diagnosis, and treatment, nonoperative and operative. The second part presents the details of a nurse's duties in preparation, assistance, examination, operation, and care of patients. The book is abundantly illustrated with 365 excellent engravings, including one admirable color plate of an anatomic median section, the frontispiece. It is a very useful and valuable work for nurses and practitioners.

The Queen Charlotte's Practice of Obstetrics, by members of the Hospital Staff: J. BRIGHT BANISTER, M.D., F.R.C.S., ALECK W. BOMNE, M.B., F.R.C.S., TREVOR B. DAVIES, M.D., F.R.C.S., L. GARNEE RIVETT, M.C., F.R.C.S., L. G. PHILLIPS, M.S., F.R.C.S., C. S. LARN-ROBERTS, M.S., F.R.C.S. William Wood and Co., 1927, New York.

This volume has been prepared in order to set before the profession the principles and methods of obstetrics practised at Queen Charlotte's Lying-in Hospital at London. Those who are personally familiar with this famous institution will find on every page pleasant reminders of its interesting history and continuous service. The book deals consecutively with development, anatomy, normal and abnormal pregnancy, labor, and puerperium, the healthy, the premature and the unhealthy baby, obstetric operations, and a variety of miscellaneous subjects. It is an admirable epitome of the more conservative English obstetrics. It is adequately illustrated with 270 text figures. Not the least delightful of the illustrations is the charming portrait of Queen Charlotte which forms the frontispiece.